

VICINITY MAP
NOT TO SCALE

SWALE CREEK TRIBUTARIES

ROAD CROSSINGS AND HABITAT IMPROVEMENT

FINAL DESIGN

Klickitat County, Washington

May 24, 2023



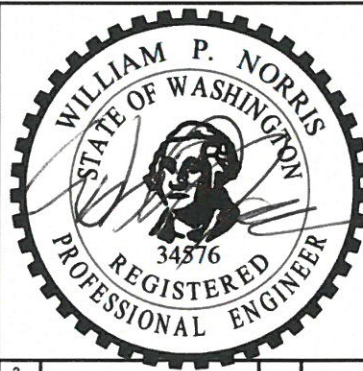
SITE MAP
NOT TO SCALE

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LOCATION

Klickitat County, Washington
LAT: N 45°48'44.51"
LONG: W 121° 5'15.48"
SECTION: Section 20, T4N R14E
WATER BODY: RATTLE SNAKE GULCH
TRIBUTARY: SWALE CREEK



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173 N Main Ave,
White Salmon, WA 98672 www.moreredds.com

CLIENT:
YAKAMA NATION FISHERIES PROGRAM
SOUTHERN TERRITORIES HABITAT PROJECT
PO BOX 215, KICKITAT COUNTY, WA 98628

SITE: SWALE CREEK TRIBUTARIES
ROAD CROSSINGS AND HABITAT IMPROVEMENT

TITLE:
COVER SHEET, LOCATION,
AND SHEET INDEX

SCALE:	DATE:	DRAWN:	CHECKED:
	5/24/23	ME,RP,CP	BN,RP
PROJ. NO:	DRAWING NO:	Total Sheets:	
-	1	18	

GENERAL NOTES

WORK PERFORMED UNDER THIS CONTRACT SHALL CONFORM TO BPA HIP HANDBOOK VERSION 5.2 AND LOCAL REGULATORY REQUIREMENTS UNLESS OTHERWISE INDICATED. IN THE EVENT OF A DISCREPANCY BETWEEN SPECIFICATIONS OR REGULATORY STANDARDS, THE MORE STRINGENT REQUIREMENTS SHALL APPLY.

THE CONTRACTOR SHALL ATTEND A MANDATORY PRE-BID SITE MEETING.

THE CONTRACTOR SHALL ATTEND A PRE-CONSTRUCTION MEETING WITH OWNER AND OWNER'S REPRESENTATIVE PRIOR TO BEGINNING CONSTRUCTION.

ALL WORK SHALL CONFORM TO THE CURRENT EDITIONS OF STANDARD PLANS AND SPECIFICATIONS OF THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION (WSDOT), AND LOCAL STANDARDS UNLESS INDICATED OTHERWISE BY THE CONTRACT DOCUMENTS. IN CASE OF A CONFLICT BETWEEN THE REGULATORY STANDARDS OR SPECIFICATIONS, THE MORE STRINGENT WILL PREVAIL.

IN THE EVENT OF A CONFLICT BETWEEN NOTES, REGULATORY REQUIREMENTS, OR OTHER CONTRACT DOCUMENTATION THE CONTRACTOR SHALL OBTAIN CLARIFICATION FROM THE ENGINEER.

THE CONTRACTOR SHALL REMOVE DEBRIS AND LITTER FROM WORK AREAS AND SHALL STOCKPILE, PLACE OR DISPOSE OF MATERIALS, AS SPECIFIED.

EXISTING DATA

SURVEY DATA OF CHANNEL AND INFRASTRUCTURE COLLECTED OCTOBER 2021. LIDAR TOPOGRAPHIC DATA PROVIDED BY OTHERS.

SOILS

LEGAL-ROCK OUTCROP-RUBBLE LAND COMPLEX, 30 TO 65 PERCENT SLOPES, PER USDA SOIL SURVEY MAP

FISH RESCUE

FISH RESCUE ACTIVITIES SHALL BE SUPERVISED BY A QUALIFIED FISHERIES BIOLOGIST EXPERIENCES WITH THE COLLECTION AND HANDLING OF SALMONIDS AND LAMPREY FROM CONSTRUCTION SITES.

IF FISH ARE CONCENTRATED IN POOLS DURING DIVERSION OR DEWATERING, THEY SHALL BE COLLECTED BY SEINE AND/OR DIP NETS, PLACED IN CLEAN TRANSFER CONTAINERS WITH ADEQUATE VOLUME AND TEMPERATURE OF WATER AND RELEASED WITHIN 10 MINUTES OF CAPTURE.

UTILITIES

THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR HAVING UTILITIES LOCATED PRIOR TO CONSTRUCTION ACTIVITIES.

THE CONTRACTOR SHALL CALL (800-424-5555) FOR UTILITY LOCATE PRIOR TO CONSTRUCTION

THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE AFFECTED UTILITY SERVICE TO REPORT ANY DAMAGED OR DESTROYED UTILITIES.

THE CONTRACTOR SHALL PROVIDE EQUIPMENT OR LABOR TO AID THE AFFECTED UTILITY SERVICE IN REPAIRING DAMAGED OR DESTROYED UTILITIES AT NO ADDITIONAL COST.

CULTURAL RESOURCES

ANY CULTURAL RESOURCES AND/OR ARTIFACTS EXHUMED OR OTHERWISE ENCOUNTERED SHALL NOTIFY YAKAMA NATION PROJECT MANAGER, DAVID LINDLEY, DESIGN ENGINEER AND BPA ARCHAEOLOGIST. CONSTRUCTION ACTIVITIES THAT UNCOVERED CULTURAL RESOURCES AND/OR ARTIFACTS SHALL IMMEDIATELY CEASE UNTIL A RESOURCE INVENTORY IS COMPLETED.

TREE SALVAGE

EXISTING TREES AND SHRUBS TO BE REMOVED FOR ACCESS WILL BE MARKED FOR REMOVAL. TREES WITHIN THE CLEARING LIMITS SHALL BE WHOLE TREES REMOVED WITHOUT CUTTING AND WITH ROOTS INTACT. TREES AND SHRUBS REMOVED MAY BE CLASSIFIED AS SALVAGED TREES OR SLASH DEPENDING ON SPECIFIED CRITERIA AND PLACED WITHIN LARGE WOOD STRUCTURES. SOME SLASH AND/OR SALVAGED TREES MAY BE PLACED OVER DISTRUBED AREAS DEPENDING ON QUANTITIES AVAILABLE.

REMOVED VEGETATION SHALL BE INCORPORATED INTO LOG STRUCTURES AT NO ADDITIONAL COST. VEGETATION LARGER THAN 12 IN. DIAMETER AND 15 FT. LENGTH SHALL BE USED AS STRUCTURAL ELEMENTS. SMALLER MATERIAL SHALL BE USED AS SLASH.

SELECT TREES REMOVED WITHIN CLEARING LIMITS SHALL BE REMOVED WHOLE WITH ROOT WAD AND USED IN RESTORATION CONSTRUCTION. TREES WILL BE FLAGGED FOLLOWING STAKING AND PRIOR TO CONSTRUCTION.

EXISTING TREES AND SHRUBS TO REMAIN

ALL EXISTING TREES AND SHRUBS THAT ARE NOT MARKED FOR REMOVAL SHALL REMAIN UNDISTURBED. THE CONTRACTOR SHALL NOT DEBARK OR DAMAGE EXISTING TREES AND SHALL STAY OUTSIDE OF THE DRIPLINE OF EXISTING TREES AND SHRUBS TO REMAIN.

CONSTRUCTION ACCESS

THE CONTRACTOR IS SOLELY RESPONSIBLE FOR OBTAINING TRAFFIC CONTROL, ACCESS PERMITS AND/OR PROVIDING TRAFFIC CONTROL INCLUDING SIGNAGE AND FLAGGERS. SIGNAGE MUST ADEQUATELY WARN DRIVERS THAT ROADS ARE UNDER CONSTRUCTION AND BRIDGES ARE OUT. DETOUR SIGNS SHALL NOTIFY DRIVERS OF TEMPORARY TRAFFIC ROUTES.

ALL PERSONNEL, EQUIPMENT, AND MATERIALS SHALL REMAIN WITHIN THE DESIGNATED LIMITS OF DISTURBANCE.

CONSTRUCTION STAKING

OWNER'S REPRESENTATIVE WILL PROVIDE STAKING OF PROJECT LIMITS, GRADE STAKES, AND ELEVATION CONTROL POINTS. SOME FIELD ADJUSTMENTS TO THE LINES AND GRADES ARE TO BE EXPECTED.

CONTRACTOR SHALL MEET WITH THE OWNER AND OWNER'S REPRESENTATIVE TO DEFINE AND MARK LIMITS OF DISTURBANCE PRIOR TO MOBILIZATION OF EQUIPMENT OR MATERIALS ONTO THE SITE.

THE CONTRACTOR SHALL REPLACE DAMAGED OR DESTROYED CONSTRUCTION STAKES AT NO ADDITIONAL COST.

CONSTRUCTION MATERIALS

ESTIMATED MATERIAL VOLUMES ARE APPROXIMATE IN-PLACE QUANTITY AND NOT FACTORED FOR EXPANSION OR REDUCTION OF EXCAVATED MATERIAL OR COMPACTION OF PLACED MATERIAL.

LOCATION, ALIGNMENT, AND ELEVATION OF LOGS AND LOGS WITH ROOT WADS ARE SUBJECT TO ADJUSTMENT BASED ON FIELD CONDITIONS, AND MATERIAL SIZE.

ANY EXCESS MATERIAL SHALL BE STOCKPILED NEATLY IN AN APPROVED LOCATION OF THE STOCKPILE AND STAGING AREA. AT COMPLETION OF WORK, THE MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.

EROSION AND SEDIMENT CONTROL

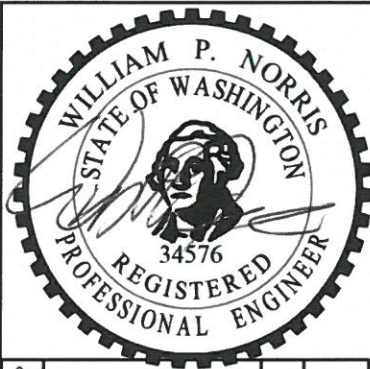
THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR PROVIDING AND MAINTAINING TESC TO COMPLY WITH ALL APPLICABLE EROSION CONTROL REGULATIONS AT THEIR OWN EXPENSE.

ANY TESC PLAN PROVIDED IN THESE CONTRACT DOCUMENTS IS FOR INFORMATIONAL PURPOSES ONLY. RECOMMENDATIONS FOR TESC PLANNING INCLUDE:

1. TESC BMP'S IN THESE CONTRACT DOCUMENTS ARE THE MINIMUM REQUIREMENTS ANTICIPATED FOR SITE CONDITIONS. TESC BMP'S SHALL BE UPGRADED TO RESPOND TO STORM EVENTS AT NO ADDITIONAL COST TO COMPLY WITH APPLICABLE REGULATIONS.
2. THE CONTRACTOR SHALL MONITOR WEATHER FORECASTS AND UPGRADE FACILITIES PRIOR TO STORM EVENTS, AS NECESSARY.
3. CONSTRUCTION AND IMPLEMENTATION OF THE CONTRACTOR'S TESC PLAN AND MAINTENANCE, UPGRADING, AND REPLACEMENT TESC BMP'S IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL CONSTRUCTION IS COMPLETE, WORK IS APPROVED, AND VEGETATION IS ESTABLISHED.
4. FUNCTION OF TESC BMP'S SHALL BE INSPECTED DAILY AND MAINTAINED BY THE CONTRACTOR TO CONFORM TO APPLICABLE EROSION CONTROL REGULATIONS.
5. STORMWATER RUNOFF FROM OFF SITE SHALL BE HANDLED DIFFERENTLY THAN ON SITE SOURCES. GENERALLY, STORMWATER RUNOFF FROM OFF SITE SOURCES SHOULD BE DIVERTED AROUND DISTURBED AREAS.
6. DESIGN, CONSTRUCT AND PHASE CUT AND FILL SLOPES TO MINIMIZE EROSION. REDUCE RUNOFF VELOCITIES ON DISTURBED SLOPES BY PROVIDING TEMPORARY BARRIERS AND SEDIMENT TRAPPING.
7. STABILIZED CONSTRUCTION ENTRANCES AND ADDITIONAL BMP'S MAY BE REQUIRED AND MAINTAINED AS NECESSARY FOR THE DURATION OF THE PROJECT.
8. FOR MONTHS OF MAY THROUGH SEPTEMBER ALL EXPOSED SOILS SHALL BE PROTECTED FROM EROSION BY MULCHING, PLASTIC SHEETING, HYDROSEED COVERING, OR OTHER MEASURES WITHIN THREE DAYS OF GRADING. FOR THE MONTHS OF OCTOBER THROUGH APRIL, ALL EXPOSED SOILS SHALL BE STABILIZED BEFORE WORK SHUT DOWN, HOLIDAYS OR WEEKENDS, IF NECESSARY BASED ON WEATHER FORECASTS. STOCKPILED SOILS SHALL BE PROTECTED WITH PLASTIC SHEETING OR STABILIZED WITH SEDIMENT TRAPPING BMP'S.
9. TESC BMP'S ON INACTIVE SITES SHALL BE INSPECTED ON A MONTHLY, MIN., BASIS AND WITHIN 24 HOURS OF A STORM EVENT.
10. TESC MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION, WHEN TEMPORARY MEASURES ARE NO LONGER EFFECTIVE. TRAPPED SEDIMENT SHALL BE REMOVED FROM THE SITE OR BLENDED INTO FINISHED GRADING AS LONG AS IT DOES NOT AFFECT PLANT ESTABLISHMENT. DISTURBED AREAS RESULTING FROM CUT AND FILL SHALL BE PERMANENTLY STABILIZED.
11. CONTRACTOR SHALL PRODUCE WEEKLY TESC REPORTS SUMMARIZING INSPECTIONS, PERSONNEL WHO CONDUCTED THE INSPECTION, OBSERVATIONS RELATED TO IMPLEMENTATION OF THE CONTRACTOR'S TESC PLAN, AND ACTIONS TAKEN RESULTING FROM INSPECTIONS. THE WEEKLY REPORTS SHALL BE RETAINED ON SITE BY THE CONTRACTOR. THE REPORTS SHALL INCLUDE WHEN GRADING ACTIVITIES COMMENCE AND CEASE, DATES OF RAINFALL EXCEEDING 2 HOURS DURATION OR MORE THAN 0.5 IN. PER 24 HOURS, WHEN SPECIFIC STABILIZATION MEASURES COMMENCE AND CEASE. TESC REPORTS SHALL BE MADE AVAILABLE TO THE ENGINEER ON REQUEST FOR REVIEW AND APPROVAL PRIOR TO APPLICATION FOR PAYMENT.

CONSTRUCTION DEWATERING

THE CONTRACTOR SHALL AVOID RELEASE OF TURBID WATER DURING CONSTRUCTION DEWATERING. EXCAVATION OF DEWATERING SUMPS BEYOND THE LIMITS SHOWN SHALL BE PERFORMED AT NO ADDITIONAL COST. TURBID WATER MAY BE PUMPED TO UPLAND DISCHARGE AREAS AND ALLOWED TO SHEET FLOW THROUGH VEGETATION BEFORE INFILTRATING. IF RUNOFF IS OCCURRING WITHOUT INFILTRATION, THE CONTRACTOR SHALL CEASE PUMPING TURBID WATER AND ESTABLISH OTHER MEANS TO AVOID SURFACE WATER TURBIDITY AND/OR CONTAMINATION AT NO ADDITIONAL COST. OTHER MEANS MAY INCLUDE FILTRATION BAG, SEDIMENT RETENTION AREA OR ADDITIONAL INFILTRATION AREAS.



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HIP GENERAL CONSERVATION MEASURES

THESE MEASURES WILL BE IMPLEMENTED ON ALL PROJECTS COVERED UNDER THE HIP.

TIMING OF IN-WATER WORK

FORMAL RECOMMENDATIONS PUBLISHED BY STATE AGENCIES SUCH AS THE OREGON DEPARTMENT OF FISH AND WILDLIFE (ODFW), WASHINGTON DEPARTMENT OF FISH AND WILDLIFE (WDFW), IDAHO DEPARTMENT OF FISH AND GAME (IDFG), AND MONTANA FISH WILDLIFE AND PARKS (MFWP), OR INFORMAL RECOMMENDATIONS FROM THE APPROPRIATE STATE FISHERY BIOLOGIST IN REGARD TO THE TIMING OF IN-WATER WORK, WILL BE FOLLOWED.

- 1. BULL TROUT - IN BULL TROUT SPAWNING AND REARING AREAS, EGGS, ALEVIN, AND FRY ARE PRESENT NEARLY YEAR ROUND. IN BULL TROUT HABITATS DESIGNATED AS FORAGING, MIGRATION, AND OVERWINTERING (FMO) HABITATS, JUVENILE AND ADULT BULL TROUT MAY BE PRESENT SEASONALLY. SOME PROJECT LOCATIONS MAY NOT HAVE DESIGNATED IN-WATER WORK WINDOWS FOR BULL TROUT, OR IF THEY DO, THEY MAY DIFFER FROM THE IN-WATER WORK WINDOWS FOR SALMON AND STEELHEAD. IF THIS IS THE CASE, THE PROJECT SPONSOR WILL CONTACT THE APPROPRIATE USFWS FIELD OFFICE TO ENSURE THAT ALL REASONABLE IMPLEMENTATION MEASURES ARE CONSIDERED AND AN APPROPRIATE IN-WATER WORK WINDOW IS USED TO MINIMIZE PROJECT EFFECTS.
- 2. LAMPREY - TO MINIMIZE DISTURBANCE TO MIGRANT ADULTS, THE PROJECT SPONSOR AND/OR THEIR CONTRACTORS WILL AVOID WORKING INSTREAM OR RIVER CHANNELS THAT CONTAIN PACIFIC LAMPREY FROM MARCH 1 TO JULY 1 IN LOW- TO MID-ELEVATION REACHES (<5,000 FEET). IN HIGH-ELEVATION REACHES (>5,000 FEET), THE PROJECT SPONSOR WILL AVOID WORKING INSTREAM OR RIVER CHANNELS FROM MARCH 1 TO AUGUST 1. IF EITHER TIMEFRAME IS INCOMPATIBLE WITH OTHER OBJECTIVES, THE AREA WILL BE SURVEYED FOR NESTS AND LAMPREY PRESENCE, AND AVOIDED IF POSSIBLE. IF LAMPREYS ARE KNOWN TO EXIST, THE PROJECT SPONSOR WILL UTILIZE BEST MANAGEMENT PRACTICES (BMPS) FOR DEWATERING AND SALVAGE AS OUTLINED IN USFWS 20101, OR MOST RECENT GUIDANCE. SALVAGE SHOULD INCLUDE SALVAGE OF LARVAL LAMPREY FROM SEDIMENTS. (SEE SECTION “CONSERVATION MEASURES FOR SALVAGE OF NATIVE FISH, LAMPREY, AND MUSSELS”).

CONTAMINANTS

THE PROJECT SPONSOR WILL COMPLETE A SITE ASSESSMENT WITH THE FOLLOWING ELEMENTS TO IDENTIFY THE TYPE, QUANTITY, AND EXTENT OF ANY POTENTIAL CONTAMINATION FOR ANY ACTION THAT INVOLVES EXCAVATION OF MORE THAN 20 CUBIC YARDS OF MATERIAL:

- 1) A REVIEW OF AVAILABLE RECORDS, SUCH AS FORMER SITE USE, BUILDING PLANS, AND RECORDS OF ANY PRIOR CONTAMINATION EVENTS;
- 2) A SITE VISIT TO INSPECT THE AREAS USED FOR VARIOUS INDUSTRIAL PROCESSES AND THE CONDITION OF THE PROPERTY;
- 3)INTERVIEWS WITH KNOWLEDGEABLE PEOPLE, SUCH AS SITE OWNERS, OPERATORS, AND OCCUPANTS, NEIGHBORS, OR LOCAL GOVERNMENT OFFICIALS; AND
- 4)A SUMMARY, STORED WITH THE PROJECT FILE THAT INCLUDES AN ASSESSMENT OF THE LIKELIHOOD THAT CONTAMINANTS ARE PRESENT AT THE SITE, BASED ON ITEMS 4(A) THROUGH 4(C).

SITE LAYOUT AND FLAGGING

- 1) PRIOR TO CONSTRUCTION, THE PROJECT AREA WILL BE CLEARLY FLAGGED TO IDENTIFY THE FOLLOWING:
- 2) SENSITIVE RESOURCE AREAS, SUCH AS AREAS BELOW ORDINARY HIGH WATER (OHW), SPAWNING AREAS, SPRINGS, AND WETLANDS;
- 3)EQUIPMENT ENTRY AND EXIT POINTS;
- 4)ROAD AND STREAM CROSSING ALIGNMENTS;
- 5)STAGING, STORAGE, AND STOCKPILE AREAS; AND
- 6)NO-HERBICIDE-APPLICATION AREAS AND BUFFERS.

TEMPORARY ACCESS ROADS AND PATHS

- 1) EXISTING ACCESS ROADS AND PATHS WILL BE PREFERENTIALLY USED WHENEVER POSSIBLE, AND THE NUMBER AND LENGTH OF TEMPORARY ACCESS ROADS AND PATHS THROUGH RIPARIAN AREAS AND FLOODPLAINS WILL BE MINIMIZED TO LESSEN SOIL DISTURBANCE, SOIL COMPACTION, AND IMPACTS TO VEGETATION.
- 2) VEHICLE USE AND HUMAN ACTIVITIES, INCLUDING WALKING IN AREAS OCCUPIED BY TERRESTRIAL ESA- LISTED SPECIES, WILL BE MINIMIZED.

- 3) TEMPORARY ACCESS ROADS AND PATHS WILL NOT BE BUILT ON SLOPES WHERE GRADE, SOIL, OR OTHER FEATURES SUGGEST A LIKELIHOOD OF EXCESSIVE EROSION OR FAILURE. IF SLOPES ARE STEEPER THAN 30%, THE ROAD WILL BE DESIGNED BY A CIVIL ENGINEER WITH EXPERIENCE IN STEEP ROAD DESIGN.
- 4) THE REMOVAL OF RIPARIAN VEGETATION DURING CONSTRUCTION OF TEMPORARY ACCESS ROADS WILL BE MINIMIZED. WHEN TEMPORARY VEGETATION REMOVAL IS REQUIRED, VEGETATION WILL BE CUT AT GROUND LEVEL (NOT GRUBBED).
- 5) AT PROJECT COMPLETION, ALL TEMPORARY ACCESS ROADS AND PATHS WILL BE DECOMPACTED AND RESHAPED TO MATCH THE ORIGINAL CONTOUR; AND THE SOIL WILL BE STABILIZED AND REVEGETATED.
- 6)HELICOPTER FLIGHT PATTERNS WILL BE ESTABLISHED IN ADVANCE, AND LOCATED TO AVOID TERRESTRIAL ESA- LISTED SPECIES, INCLUDING THEIR OCCUPIED HABITAT AND APPROPRIATE BUFFERS, DURING SENSITIVE LIFE STAGES (I.E. NESTING AND CRITICAL BREEDING PERIODS). SEE SPECIES-SPECIFIC CONSERVATION MEASURES FOR EACH LISTED SPECIES THAT MAY OCCUR WITHIN THE PROJECT AREA FOR MORE INFORMATION.

TEMPORARY STREAM CROSSINGS

- 1) EXISTING STREAM CROSSINGS, FORDS, OR BEDROCK WILL BE USED WHENEVER POSSIBLE.
- 2) IF AN EXISTING STREAM CROSSING IS NOT ACCESSIBLE, TEMPORARY CROSSINGS WILL BE INSTALLED. TREATED WOOD SHALL NOT BE USED ON TEMPORARY BRIDGE CROSSINGS OR IN LOCATIONS IN CONTACT WITH OR OVER WATER.
- 3)FOR PROJECTS THAT REQUIRE EQUIPMENT AND VEHICLES TO CROSS IN THE WET:
 - a) THE LOCATION AND NUMBER OF ALL WET CROSSINGS MUST BE APPROVED BY BPA AND CLEARLY INDICATED ON DESIGN DRAWINGS.
 - b) VEHICLES AND MACHINERY WILL CROSS STREAMS AT RIGHT ANGLES TO THE MAIN CHANNEL WHEREVER POSSIBLE.
 - c) NO STREAM CROSSINGS WILL OCCUR 300 FEET UPSTREAM OR 100-FEET DOWNSTREAM OF AN EXISTING REDD OR SPAWNING FISH.
 - d) AFTER PROJECT COMPLETION, TEMPORARY STREAM CROSSINGS WILL BE OBLITERATED, AND THE BANKS RESTORED.

STAGING, STORAGE, AND STOCKPILE AREAS

- 1) STAGING AREAS (USED FOR CONSTRUCTION EQUIPMENT STORAGE, VEHICLE STORAGE, FUELING, SERVICING, AND HAZARDOUS MATERIAL STORAGE) WILL BE 150 FEET OR MORE FROM ANY NATURAL WATERBODY OR WETLAND, OR ON AN ADJACENT ESTABLISHED ROAD AREA IN A LOCATION AND MANNER THAT WILL PRECLUDE EROSION INTO, OR CONTAMINATION OF, THE STREAM OR FLOODPLAIN.
- 2)NATURAL MATERIALS USED FOR IMPLEMENTATION OF AQUATIC RESTORATION, SUCH AS LARGE WOOD, GRAVEL, AND BOULDERS, MAY BE STAGED WITHIN 150 FEET IF CLEARLY INDICATED IN PLANS. RECOMMEND REFERRING TO AREA AS “NATURAL MATERIAL STOCKPILE AREA” WITH A NOTE THAT STATES VEHICLE STORAGE, EQUIPMENT STORAGE, HAZARDOUS MATERIALS, FUELING, AND SERVICING NOT PERMITTED IN THIS AREA.
- 3) ANY LARGE WOOD, TOPSOIL, AND NATIVE CHANNEL MATERIAL DISPLACED BY CONSTRUCTION WILL BE STOCKPILED FOR USE DURING SITE RESTORATION AT A SPECIFICALLY IDENTIFIED AND FLAGGED AREA.
- 4) ANY MATERIAL NOT USED IN RESTORATION, AND NOT NATIVE TO THE FLOODPLAIN, WILL BE REMOVED TO A LOCATION OUTSIDE OF THE 100-YEAR FLOODPLAIN FOR DISPOSAL.

EQUIPMENT

MECHANIZED EQUIPMENT AND VEHICLES WILL BE SELECTED, OPERATED, AND MAINTAINED IN A MANNER THAT MINIMIZES ADVERSE EFFECTS ON THE ENVIRONMENT (E.G., MINIMALLY-SIZED, LOW PRESSURE TIRES; MINIMAL HARD-TURN PATHS FOR TRACKED VEHICLES; TEMPORARY MATS OR PLATES WITHIN WET AREAS OR ON SENSITIVE SOILS). ALL VEHICLES AND OTHER MECHANIZED EQUIPMENT WILL BE:

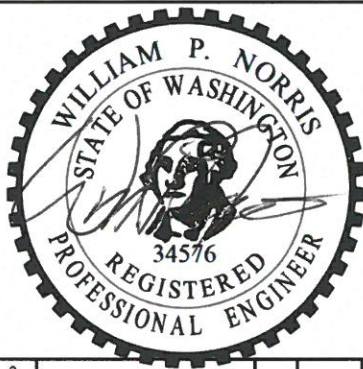
- 1) STORED, FUELED, AND MAINTAINED IN A VEHICLE STAGING AREA LOCATED 150 FEET OR MORE FROM ANY NATURAL WATER BODY OR WETLAND, OR ON AN ADJACENT, ESTABLISHED ROAD AREA;

- 2) REFUELED IN A VEHICLE STAGING AREA LOCATED 150 FEET OR MORE FROM A NATURAL WATERBODY OR WETLAND, OR IN AN ISOLATED HARD ZONE, SUCH AS A PAVED PARKING LOT OR ADJACENT, ESTABLISHED ROAD (THIS MEASURE APPLIES ONLY TO GAS OR DIESEL-POWERED EQUIPMENT WITH TANKS LARGER THAN 5 GALLONS);
- 3) BIODEGRADABLE LUBRICANTS AND FLUIDS2 SHALL BE USED ON EQUIPMENT OPERATING IN THE STREAM CHANNEL AND LIVE WATER.
- 4) INSPECTED DAILY FOR FLUID LEAKS BEFORE LEAVING THE VEHICLE STAGING AREA FOR OPERATION WITHIN 150 FEET OF ANY NATURAL WATER BODY OR WETLAND; AND
- 5) THOROUGHLY CLEANED BEFORE OPERATION BELOW ORDINARY HIGH WATER (OHW), AND AS OFTEN AS NECESSARY DURING OPERATION, TO REMAIN FREE OF GREASE.

EROSION CONTROL

EROSION CONTROL BEST MANAGEMENT PRACTICES (BMPS) WILL BE PREPARED AND CARRIED OUT, COMMENSURATE WITH THE SCOPE OF THE ACTION THAT MAY INCLUDE THE FOLLOWING:

- 1) TEMPORARY EROSION CONTROL BMPS.
 - a. TEMPORARY EROSION CONTROL BMPS SHALL BE IN PLACE BEFORE ANY SIGNIFICANT ALTERATION OF THE ACTION SITE, AND SHALL BE APPROPRIATELY INSTALLED DOWNSLOPE OF PROJECT ACTIVITY WITHIN THE RIPARIAN BUFFER AREA UNTIL SITE REHABILITATION IS COMPLETE.
 - b. IF THERE IS A POTENTIAL FOR ERODED SEDIMENT TO ENTER THE STREAM, SEDIMENT BARRIERS WILL BE INSTALLED AND MAINTAINED FOR THE DURATION OF PROJECT IMPLEMENTATION.
 - c. TEMPORARY EROSION CONTROL MEASURES MAY INCLUDE SEDGE MATS, FIBER WATTLES, SILT FENCES, JUTE MATTING, WOOD FIBER MULCH WITH SOIL BINDER, OR GEOTEXTILES AND GEOSYNTHETIC FABRIC. BIODEGRADABLE NETTING MAY BE USED SO THAT THEY CAN DECOMPOSE ON SITE.
 - d. SOIL STABILIZATION UTILIZING WOOD FIBER MULCH AND TACKIFIER (HYDRO-APPLIED) MAY BE USED TO REDUCE EROSION OF BARE SOIL IF THE MATERIALS ARE NOXIOUS-WEED-FREE AND NONTOXIC TO AQUATIC AND TERRESTRIAL ANIMALS, SOIL MICROORGANISMS, AND VEGETATION.
 - e. SEDIMENT WILL BE REMOVED FROM EROSION CONTROL BMP ONCE IT HAS REACHED 1/3 OF THE EXPOSED HEIGHT OF THE BMP.
 - f. ONCE THE SITE IS STABILIZED FOLLOWING CONSTRUCTION, TEMPORARY EROSION CONTROL BMPS WILL BE REMOVED.
- 2) EMERGENCY EROSION CONTROL BMPS. THE FOLLOWING MATERIALS FOR EMERGENCY EROSION CONTROL WILL BE AVAILABLE AT THE WORK SITE:
 - a. A SUPPLY OF SEDIMENT CONTROL MATERIALS; AND
 - b. AN OIL-ABSORBING FLOATING BOOM WHENEVER SURFACE WATER IS PRESENT.



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CONSERVATION MEASURES

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DUST ABATEMENT

THE PROJECT SPONSOR WILL DETERMINE THE APPROPRIATE DUST CONTROL MEASURES BY CONSIDERING SOIL TYPE, EQUIPMENT USAGE, PREVAILING WIND DIRECTION, AND THE EFFECTS CAUSED BY OTHER EROSION AND SEDIMENT CONTROL MEASURES. IN ADDITION, THE FOLLOWING CRITERIA WILL BE FOLLOWED:

- 1) WORK WILL BE SEQUENCED AND SCHEDULED TO REDUCE EXPOSED BARE SOIL SUBJECT TO WIND EROSION.
- 2) DUST-ABATEMENT ADDITIVES AND STABILIZATION CHEMICALS (TYPICALLY MAGNESIUM CHLORIDE, CALCIUM CHLORIDE SALTS, OR LIGNIN SULFONATE) WILL NOT BE APPLIED WITHIN 25 FEET OF A NATURAL WATERBODY OR WETLAND AND WILL BE APPLIED SO AS TO MINIMIZE THE LIKELIHOOD THAT THEY WILL ENTER STREAMS. APPLICATIONS OF LIGNIN SULFONATE WILL BE LIMITED TO A MAXIMUM RATE OF 0.5 GALLONS PER SQUARE YARD OF ROAD SURFACE, ASSUMING A 50:50 (LIGNIN SULFONATE TO WATER) SOLUTION.
- 3) APPLICATION OF DUST ABATEMENT CHEMICALS WILL BE AVOIDED DURING OR JUST BEFORE WET WEATHER AND AT STREAM CROSSINGS OR OTHER AREAS THAT COULD RESULT IN UNFILTERED DELIVERY OF THE DUST ABATEMENT CHEMICALS TO A WATERBODY (TYPICALLY THESE WOULD BE AREAS WITHIN 25 FEET OF A NATURAL WATERBODY OR WETLAND; DISTANCES MAY BE GREATER WHERE VEGETATION IS SPARSE OR SLOPES ARE STEEP).
- 4) SPILL CONTAINMENT EQUIPMENT WILL BE AVAILABLE DURING APPLICATION OF DUST ABATEMENT CHEMICALS.

PETROLEUM-BASED PRODUCTS WILL NOT BE USED FOR DUST ABATEMENT.

SPILL PREVENTION, CONTROL, AND COUNTER MEASURES

THE FOLLOWING MEASURES WILL BE USED TO PREVENT ACCIDENTAL SPILLS OF FUEL, LUBRICANTS, HYDRAULIC FLUID3, OR OTHER CONTAMINANTS INTO THE RIPARIAN ZONE OR DIRECTLY INTO THE WATER:

- 1) A DESCRIPTION OF HAZARDOUS MATERIALS THAT WILL BE USED, INCLUDING INVENTORY, STORAGE, AND HANDLING PROCEDURES, WILL BE AVAILABLE ON-SITE.
- 2) WRITTEN PROCEDURES FOR NOTIFYING ENVIRONMENTAL RESPONSE AGENCIES WILL BE POSTED AT THE WORK SITE.
- 3) SPILL CONTAINMENT KITS (INCLUDING INSTRUCTIONS FOR CLEANUP AND DISPOSAL) ADEQUATE FOR THE TYPES AND QUANTITY OF HAZARDOUS MATERIALS USED AT THE SITE WILL BE AVAILABLE AT THE WORK SITE.
- 4) WORKERS WILL BE TRAINED IN SPILL CONTAINMENT PROCEDURES AND WILL BE INFORMED OF THE LOCATION OF SPILL CONTAINMENT KITS.
- 5) ANY WASTE LIQUIDS GENERATED AT THE STAGING AREAS WILL BE TEMPORARILY STORED UNDER AN IMPERVIOUS COVER, SUCH AS A TARPULIN, UNTIL THEY CAN BE PROPERLY TRANSPORTED TO, AND DISPOSED OF, AT A FACILITY THAT IS APPROVED FOR RECEIPT OF HAZARDOUS MATERIALS.
- 6) PUMPS USED ADJACENT TO WATER SHALL USE SPILL CONTAINMENT SYSTEMS.

INVASIVE SPECIES CONTROL

THE FOLLOWING MEASURES WILL BE FOLLOWED TO AVOID INTRODUCTION OF INVASIVE PLANTS AND NOXIOUS WEEDS INTO PROJECT AREAS:

- 1) PRIOR TO ENTERING THE SITE, ALL VEHICLES AND EQUIPMENT WILL BE POWER-WASHED, ALLOWED TO DRY FULLY, AND INSPECTED TO MAKE SURE NO PLANTS, SOIL, OR OTHER ORGANIC MATERIAL ADHERES TO THE SURFACE.
- 2) WATERCRAFT, WADERS, BOOTS, AND ANY OTHER GEAR TO BE USED IN OR NEAR WATER WILL BE INSPECTED FOR AQUATIC INVASIVE SPECIES. WADING BOOTS WITH FELT SOLES ARE NOT TO BE USED DUE TO THEIR PROPENSITY FOR AIDING IN THE TRANSFER OF INVASIVE SPECIES UNLESS DECONTAMINATION PROCEDURES ARE USED.

WORK AREA ISOLATION & FISH SALVAGE

ANY WORK AREA REQUIRING EXCAVATION OR MOBILIZATION OF SEDIMENT WITHIN THE WETTED CHANNEL WILL BE ISOLATED FROM THE ACTIVE STREAM WHENEVER ESA-LISTED FISH ARE REASONABLY CERTAIN TO BE PRESENT, OR IF THE WORK AREA IS LESS THAN 300- FEET UPSTREAM FROM KNOWN ESA-LISTED FISH SPAWNING HABITATS. IF THE WORK AREA ISOLATION PRACTICES WOULD CAUSE GREATER IMPACTS THAN IT WOULD PREVENT, IS LOCATED IN DEEP OR SWIFTLY FLOWING WATER, OR IF FISH CAN BE EFFECTIVELY EXCLUDED BY NETS OR SCREENS, THEN A VARIANCE TO NOT ISOLATE THE WORK AREA MAY BE PURSUED.

WHEN WORK AREA ISOLATION IS REQUIRED, THE CONTRACTOR SHALL INSTALL ISOLATION

ELEMENTS, DEWATER PUMPING OF THE ISOLATION AREA, AND, WHEN FISH ARE PRESENT, A FISH SCREEN THAT MEETS NMFS'S FISH SCREEN CRITERIA (NMFS 20114, OR MOST CURRENT). WIDER MESH SCREENS MAY BE USED AFTER ALL FISH HAVE BEEN REMOVED FROM THE ISOLATED AREA. WORK AREA ISOLATION AND FISH CAPTURE ACTIVITIES TAKE PLACE DURING PERIODS OF THE COOLEST AIR AND WATER TEMPERATURES POSSIBLE, NORMALLY EARLY IN THE MORNING VERSUS LATE IN THE DAY, AND DURING CONDITIONS APPROPRIATE TO MINIMIZE STRESS TO FISH SPECIES PRESENT.

A FISH BIOLOGIST WILL DETERMINE HOW TO REMOVE ESA-LISTED FISH, WITH LEAST HARM TO THE FISH, BEFORE IN-WATER WORK BEGINS. THIS WILL INVOLVE EITHER PASSIVE MOVEMENT OF FISH OUT OF THE PROJECT REACH THROUGH SLOW DEWATERING, OR ACTIVELY REMOVING THE FISH FROM THE PROJECT REACH. SHOULD ACTIVE REMOVAL BE WARRANTED, A FISH BIOLOGIST WILL CLEAR THE AREA OF FISH BEFORE THE SITE IS DEWATERED USING ONE OR MORE OF A VARIETY OF METHODS INCLUDING SEINING, DIPPING, OR ELECTROFISHING, DEPENDING ON SPECIFIC SITE CONDITIONS. IN AREAS OCCUPIED BY LARVAL LAMPREY, TO THE EXTENT POSSIBLE, SALVAGE USING GUIDANCE SET FORTH IN USFWS 2010 OR MOST RECENT GUIDANCE.

DEPENDENT UPON SITE CONDITIONS, A FISH BIOLOGIST WILL CONDUCT OR SUPERVISE THE FOLLOWING:

- 1) SLOWLY REDUCE WATER FROM THE WORK AREA TO ALLOW SOME FISH TO LEAVE THE WORK AREA VOLITIONALLY;
 - a. IF DEWATERED AREA CONTAINS LARGE FINE/ SANDY SEDIMENT DEPOSITS, LARVAL LAMPREY COULD BE PRESENT, AND POTENTIALLY IN LARGE NUMBERS. IF SO, CONSIDER ELECTROFISHING USING LAMPREY ELECTROFISHING SETTINGS (WHICH DO NOT AFFECT BONY FISH) PRIOR TO OR DURING DRAWDOWN. SEE SECTION FURTHER DOWN ON LAMPREY CONSERVATION MEASURES AND ELECTROFISHING GUIDELINES.
- 2) INSTALL BLOCK NETS;
 - a. BLOCK NETS WILL BE INSTALLED AT UPSTREAM AND DOWNSTREAM LOCATIONS AND MAINTAINED IN A SECURED POSITION TO EXCLUDE FISH FROM ENTERING THE PROJECT AREA.
 - b. BLOCK NETS WILL BE SECURED TO THE STREAM CHANNEL BED AND BANKS UNTIL FISH CAPTURE AND TRANSPORT ACTIVITIES ARE COMPLETE. BLOCK NETS MAY BE LEFT IN PLACE FOR THE DURATION OF THE PROJECT TO EXCLUDE FISH.
 - c. IF BLOCK NETS REMAIN IN PLACE MORE THAN ONE DAY, THE NETS WILL BE MONITORED AT LEAST DAILY TO ENSURE THEY ARE SECURED TO THE BANKS AND FREE OF ORGANIC ACCUMULATION. IF THE PROJECT IS WITHIN BULL TROUT SPAWNING AND REARING HABITAT, THE BLOCK NETS MUST BE CHECKED EVERY 4 HOURS FOR FISH IMPINGEMENT ON THE NET. LESS FREQUENT INTERVALS MUST BE APPROVED THROUGH A VARIANCE REQUEST.
 - d. NETS WILL BE MONITORED HOURLY ANYTIME THERE IS INSTREAM DISTURBANCE.
- 3) CAPTURE FISH THROUGH SEINING, AND RELOCATE TO STREAMS;
 - a. WHILE DEWATERING, ANY REMAINING FISH WILL BE COLLECTED BY HAND OR DIP NETS.
 - b. SEINES WITH A MESH SIZE TO ENSURE CAPTURE OF THE RESIDING ESA-LISTED FISH WILL BE USED.
 - c. MINNOW TRAPS MAY BE LEFT IN PLACE OVERNIGHT AND USED IN CONJUNCTION WITH SEINING.

4) ELECTROFISH TO CAPTURE AND RELOCATE FISH NOT CAUGHT DURING SEINING, NMFS ELECTROFISHING GUIDELINES SHALL BE USED. THIS STEP IS TO BE USED AS A LAST RESORT; AFTER ALL PASSIVE TECHNIQUES HAVE BEEN EXHAUSTED.

5) CONTINUE TO SLOWLY DEWATER THE STREAM REACH;

- 6) COLLECT ANY REMAINING FISH IN COLD-WATER BUCKETS AND RELOCATE TO THE STREAM;
 - a. LIMIT THE TIME FISH WOULD BE IN A TRANSPORT BUCKET , AND RELEASE THEM AS QUICKLY AS POSSIBLE;
 - b. THE NUMBER OF FISH WITHIN A BUCKET WILL BE LIMITED, AND FISH WILL BE OF RELATIVELY COMPARABLE SIZE TO MINIMIZE PREDATION;
 - c. AERATORS FOR BUCKETS WILL BE USED, OR THE BUCKET'S WATER WILL BE FREQUENTLY CHANGED WITH COLD, CLEAR, WATER AT 15 MINUTE, OR MORE-FREQUENT, INTERVALS.
 - d. BUCKETS WILL BE KEPT IN SHADED AREAS; OR IF IN EXPOSED AREAS, COVERED BY A CANOPY.

e. DEAD FISH WILL NOT BE STORED IN TRANSPORT BUCKETS BUT WILL BE LEFT ON THE STREAMBANK TO AVOID MORTALITY COUNTING ERRORS.

7) IF ELECTROFISHING, REFER TO HIP HANDBOOK, GENERAL CONSERVATION MEASURES, FOR SPECIES-SPECIFIC, NMFS's ELECTROFISHING GUIDELINES AND REQUIREMENTS.

DEWATERING

DEWATERING, WHEN NECESSARY, WILL BE CONDUCTED OVER A SUFFICIENT PERIOD OF TIME TO ALLOW SPECIES TO NATURALLY MIGRATE OUT OF THE WORK AREA AND WILL BE LIMITED TO THE SHORTEST LINEAR EXTENT PRACTICABLE.

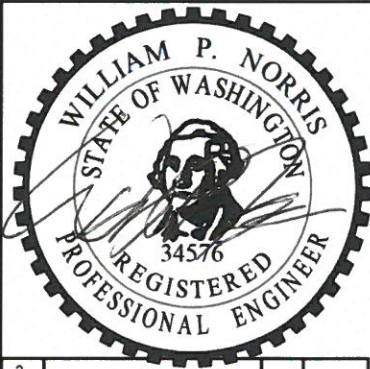
- 1) DIVERSION AROUND THE CONSTRUCTION SITE MAY BE ACCOMPLISHED WITH A COFFERDAM AND A BY-PASS CULVERT OR PIPE, OR A LINED, NON-ERODIBLE DIVERSION DITCH. WHERE GRAVITY FEED IS NOT POSSIBLE, A PUMP MAY BE USED, BUT MUST BE OPERATED IN SUCH A WAY AS TO AVOID REPETITIVE DEWATERING AND REWATERING OF THE SITE. IMPOUNDMENT BEHIND THE COFFERDAM MUST OCCUR SLOWLY THROUGH THE TRANSITION, WHILE CONSTANT FLOW IS DELIVERED TO THE DOWNSTREAM REACHES.
- 2) ALL PUMPS WILL HAVE FISH SCREENS TO AVOID JUVENILE FISH IMPINGEMENT OR ENTRAINMENT, AND WILL BE OPERATED IN ACCORDANCE WITH NMFS'S CURRENT FISH SCREEN CRITERIA (NMFS 2011, OR MOST RECENT VERSION). IF THE PUMPING RATE EXCEEDS 3 CUBIC FEET PER SECOND (CFS), A NMFS ENGINEERING REVIEW WILL BE NECESSARY. IF THE SCREEN IS IN AN ISOLATED AREA WITH NO FISH (SALMONIDS OR LARVAL LAMPREY), A LARGER MESH SCREEN MAY BE USED.
- 3) DISSIPATION OF FLOW ENERGY AT THE BYPASS OUTFLOW WILL BE PROVIDED TO PREVENT DAMAGE TO RIPARIAN VEGETATION AND/OR STREAM CHANNEL.
- 4) SEEPAGE WATER WILL BE PUMPED TO A TEMPORARY STORAGE AND TREATMENT SITE OR INTO UPLAND AREAS TO ALLOW WATER TO PERCOLATE THROUGH SOIL OR TO FILTER THROUGH VEGETATION PRIOR TO REENTERING THE STREAM CHANNEL.
- 5) IN AREAS OCCUPIED BY LARVAL LAMPREY, TO THE EXTENT POSSIBLE, SALVAGE USING GUIDANCE DESCRIBED IN ABOVE SECTION "CONSERVATION MEASURES FOR SALVAGE OF NATIVE FISH, LAMPREY AND MUSSELS" (WHICH IS BASED ON USFWS 2010) OR MOST RECENT GUIDANCE.
- 6) IN AREAS OCCUPIED BY NATIVE FRESHWATER MUSSELS, TO THE EXTENT POSSIBLE, SALVAGE USING GUIDANCE DEVELOPED BY THE XERCES SOCIETY (BLEVINS ET AL. 2018, 2019).

FISH PASSAGE

FISH PASSAGE WILL BE PROVIDED FOR ANY ADULT OR JUVENILE FISH LIKELY TO BE PRESENT IN THE PROJECT AREA DURING CONSTRUCTION, UNLESS PASSAGE DID NOT EXIST BEFORE CONSTRUCTION, OR THE STREAM IS NATURALLY IMPASSABLE AT THE TIME OF CONSTRUCTION. IF THE PROVISION OF TEMPORARY FISH PASSAGE DURING CONSTRUCTION WILL INCREASE NEGATIVE EFFECTS ON ESA-LISTED SPECIES OR THEIR HABITAT, A VARIANCE CAN BE REQUESTED FROM THE NMFS BRANCH CHIEF AND THE USFWS FIELD OFFICE SUPERVISOR. PERTINENT INFORMATION, SUCH AS THE SPECIES AFFECTED, LENGTH OF STREAM REACH AFFECTED, PROPOSED TIME FOR THE PASSAGE BARRIER, AND ALTERNATIVES CONSIDERED WILL BE INCLUDED IN THE VARIANCE REQUEST.

CONSTRUCTION AND DISCHARGE WATER

- 1) SURFACE WATER MAY BE DIVERTED TO MEET CONSTRUCTION NEEDS, BUT ONLY IF DEVELOPED SOURCES ARE UNAVAILABLE OR INADEQUATE.
- 2) DIVERSIONS WILL NOT EXCEED 10% OF THE AVAILABLE FLOW.
- 3) ALL CONSTRUCTION DISCHARGE WATER WILL BE COLLECTED AND TREATED USING THE BEST AVAILABLE TECHNOLOGY SUITABLE FOR SITE CONDITIONS.
- 4) TREATMENTS TO REMOVE DEBRIS, NUTRIENTS, SEDIMENT, PETROLEUM HYDROCARBONS, METALS AND OTHER POLLUTANTS LIKELY TO BE PRESENT WILL BE PROVIDED.



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CLIENT:
YAKAMA NATION FISHERIES PROGRAM
SOUTHERN TERRITORIES HABITAT PROJECT
PO BOX 215, KLUCKITAT COUNTY, WA 98628

SITE: SWALE CREEK TRIBUTARIES			
ROAD CROSSINGS AND HABITAT IMPROVEMENT			
TITLE: HIP GENERAL CONSERVATION MEASURES			
SCALE:	DATE: 5/24/23	DRAWN: ME,RP,CP	CHECKED: BN,RP
PROJ. NO: -	DRAWING NO: 4	Total Sheets: 18	

MINIMIZE TIME AND EXTENT OF DISTURBANCE

EARTHWORK (INCLUDING DRILLING, EXCAVATION, DREDGING, FILLING AND COMPACTING) IN WHICH MECHANIZED EQUIPMENT IS USED IN STREAM CHANNELS, RIPARIAN AREAS, AND WETLANDS WILL BE COMPLETED AS QUICKLY AS POSSIBLE. MECHANIZED EQUIPMENT WILL BE USED IN STREAMS ONLY WHEN PROJECT SPECIALISTS BELIEVE THAT SUCH ACTIONS ARE THE ONLY REASONABLE ALTERNATIVE FOR IMPLEMENTATION, OR WOULD RESULT IN LESS SEDIMENT IN THE STREAM CHANNEL OR DAMAGE (SHORT- OR LONG-TERM) TO THE OVERALL AQUATIC AND RIPARIAN ECOSYSTEM RELATIVE TO OTHER ALTERNATIVES. TO THE EXTENT FEASIBLE, MECHANIZED EQUIPMENT WILL WORK FROM THE TOP OF THE BANK, UNLESS WORK FROM ANOTHER LOCATION WOULD RESULT IN LESS HABITAT DISTURBANCE.

CESSATION OF WORK

PROJECT OPERATIONS WILL CEASE UNDER THE FOLLOWING CONDITIONS:

- 1) HIGH FLOW CONDITIONS THAT MAY RESULT IN INUNDATION OF THE PROJECT AREA, EXCEPT FOR EFFORTS TO AVOID OR MINIMIZE RESOURCE DAMAGE
- 2) WHEN ALLOWABLE WATER QUALITY IMPACTS, AS DEFINED BY THE STATE CWA SECTION 401 WATER QUALITY CERTIFICATION OR HIP TURBIDITY MONITORING PROTOCOL, HAVE BEEN EXCEEDED

SITE RESTORATION

WHEN CONSTRUCTION IS COMPLETE:

- 1) ALL STREAMBANKS, SOILS, AND VEGETATION WILL BE CLEANED UP AND RESTORED AS NECESSARY USING STOCKPILED LARGE WOOD, TOPSOIL, AND NATIVE CHANNEL MATERIAL.
- 2) ALL PROJECT-RELATED WASTE WILL BE REMOVED.
- 3) ALL TEMPORARY ACCESS ROADS, CROSSINGS, AND STAGING AREAS WILL BE DECOMPACTED AND RE-CONTOURED. WHEN NECESSARY FOR REVEGETATION AND INFILTRATION OF WATER, COMPACTED AREAS OF SOIL WILL BE LOOSENED.
- 4) ALL DISTURBED AREAS WILL BE REHABILITATED IN A MANNER THAT RESULTS IN SIMILAR OR IMPROVED CONDITIONS RELATIVE TO PRE-PROJECT CONDITIONS. THIS WILL BE ACHIEVED THROUGH REDISTRIBUTION OF STOCKPILED MATERIALS, SEEDING, AND/OR PLANTING WITH LOCAL NATIVE SEED MIXES OR PLANTS.

REVEGETATION

LONG-TERM SOIL STABILIZATION OF DISTURBED SITES WILL BE ACCOMPLISHED WITH REESTABLISHMENT OF NATIVE VEGETATION USING THE FOLLOWING CRITERIA:

- 1) PLANTING AND SEEDING WILL OCCUR PRIOR TO OR AT THE BEGINNING OF THE FIRST GROWING SEASON AFTER CONSTRUCTION.
- 2) USE A MIX OF SPECIES, APPROPRIATE TO THE SITE THAT WILL ACHIEVE ESTABLISHMENT, SHADE, AND EROSION CONTROL OBJECTIVES. THESE WOULD, PREFERABLY BE FORB, GRASS, SHRUB, OR TREE SPECIES NATIVE TO THE PROJECT AREA OR REGION.
- 3) VEGETATION, SUCH AS WILLOW, SEDGE AND RUSH MATS, WILL BE SALVAGED FROM DISTURBED OR ABANDONED FLOODPLAINS, STREAM CHANNELS, OR WETLANDS, AND REPLANTED AT THE SITE IN APPROPRIATE LOCATIONS.
- 4) INVASIVE SPECIES WILL NOT BE USED.
- 5) SHORT-TERM STABILIZATION MEASURES MAY INCLUDE THE USE OF NON-NATIVE STERILE SEED MIX (WHEN NATIVE SEEDS ARE NOT AVAILABLE), WEED-FREE CERTIFIED STRAW, JUTE MATTING, AND OTHER SIMILAR TECHNIQUES.
- 6) SURFACE FERTILIZER WILL NOT BE APPLIED WITHIN 50 FEET OF ANY STREAM CHANNEL, WATERBODY, OR WETLAND.
- 7) FENCING WILL BE INSTALLED AS NECESSARY TO PREVENT ACCESS TO REVEGETATED SITES BY LIVESTOCK OR UNAUTHORIZED PERSONS.
- 8) RE-ESTABLISHMENT OF VEGETATION IN DISTURBED AREAS WILL ACHIEVE AT LEAST 70% OF PRE-PROJECT CONDITIONS WITHIN 3 YEARS.
- 9) INVASIVE PLANTS WILL BE REMOVED OR CONTROLLED UNTIL NATIVE PLANT SPECIES ARE WELL-ESTABLISHED (TYPICALLY 3 YEARS POST-CONSTRUCTION).

ABBREVIATIONS

APPROX	APPROXIMATE
BMP	BEST MANAGEMENT PRACTICES
BPA	BONNEVILLE POWER ADMINISTRATION
CY	CUBIC YARDS

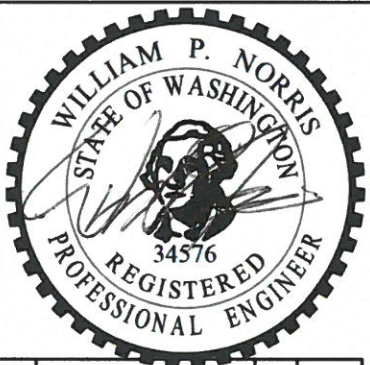
DIA	DIAMETER
DBH	DIAMETER BREAST HEIGHT
EA	EACH
ELEV	ELEVATION
FT	FEET

HIP	HABITAT IMPROVEMENT PROGRAM
HORIZ	HORIZONTAL
IN	INCHES
INV	INVERT
LWM	LARGE WOODY MATERIAL

MAX
MIN
OHW
%
RM
STA
TESC

MAXIMUM
MINIMUM
ORDINARY HIGH WATER
PERCENT
RIVER MILE
STATION
TEMPORARY EROSION

TBD	AND SEDIMENT CONTROL
TYP	TO BE DETERMINED
VERT	TYPICAL
WSE	VERTICAL
YR	WATER SURFACE ELEVATION
	YEAR



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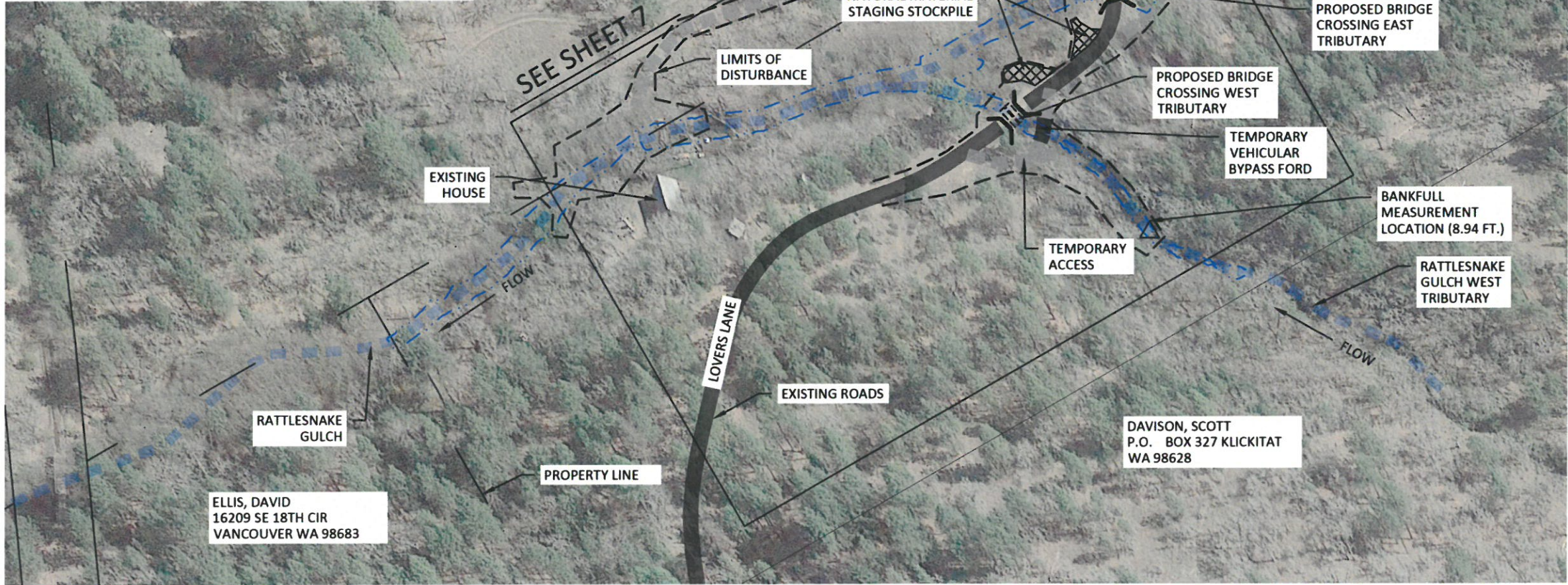
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SITE: SWALE CREEK TRIBUTARIES
ROAD CROSSINGS AND HABITAT IMPROVEMENT

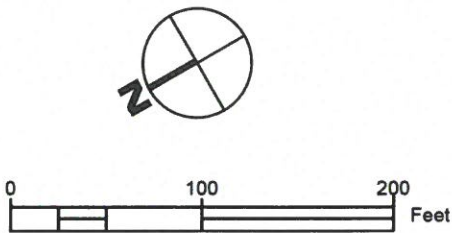
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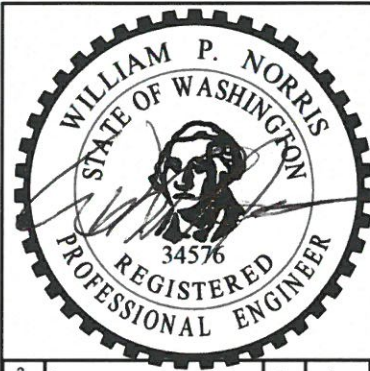
- RATTLESNAKE GULCH
- EXISTING ORDINARY HIGH WATER (OHW)
- PROPERTY LINE
- EXISTING CULVERT
- EXISTING ROADS
- TEMPORARY ACCESS
- TEMPORARY VEHICULAR BYPASS FORD
- NATURAL MATERIALS STAGING AND STOCKPILE
- EQUIPMENT STORAGE, PARKING, FUELING AND HAZARDOUS MATERIALS STAGING AREA
- LIMITS OF DISTURBANCE



SITE PLAN - EXISTING CONDITIONS



NOTE:
AERIAL PHOTO (2016) PROVIDED BY
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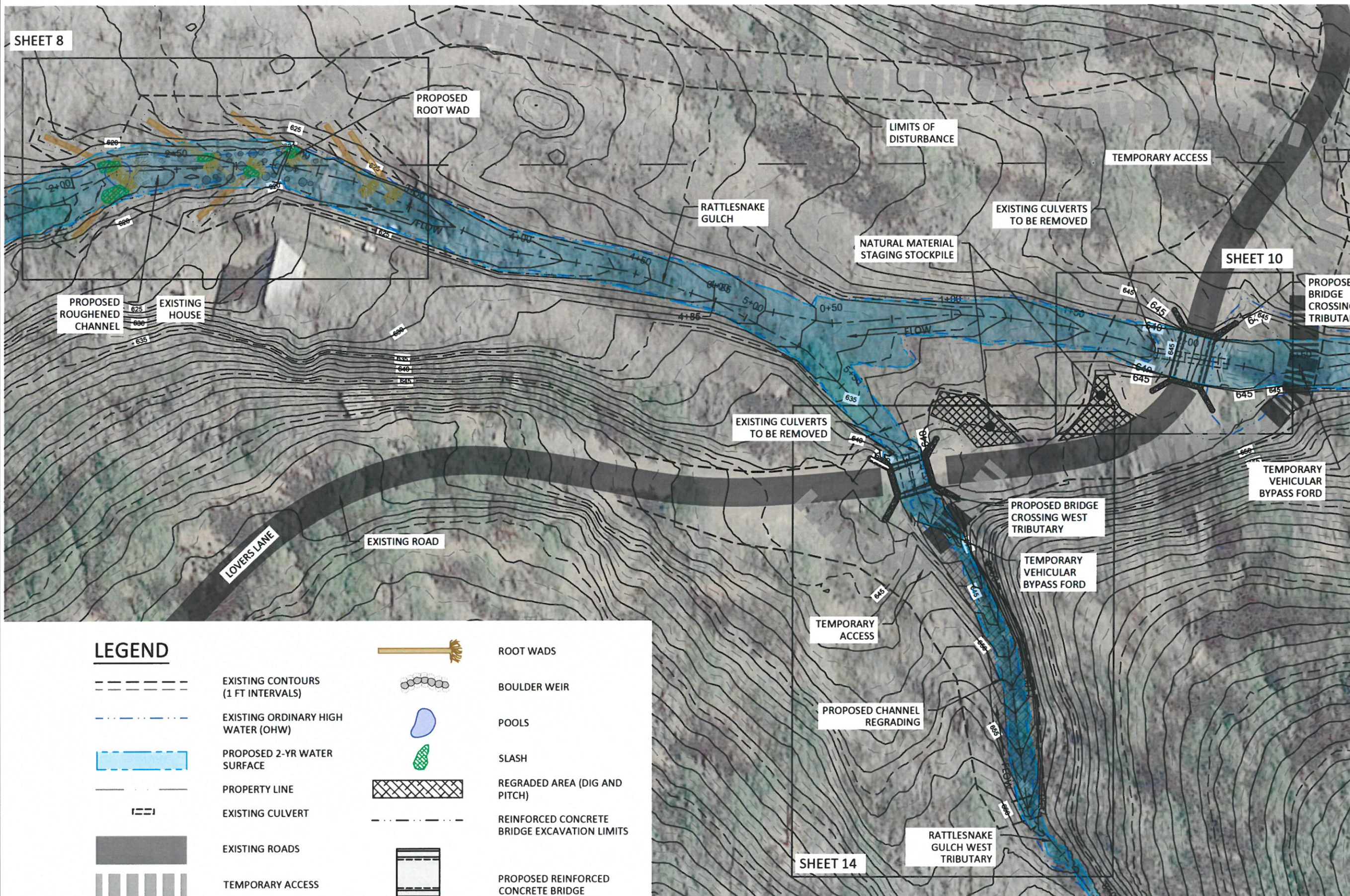
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SITE: SWALE CREEK TRIBUTARIES
ROAD CROSSINGS AND HABITAT IMPROVEMENT

TITLE:
SITE MAP - EXISTING
CONDITIONS, ACCESS,
AND STAGING

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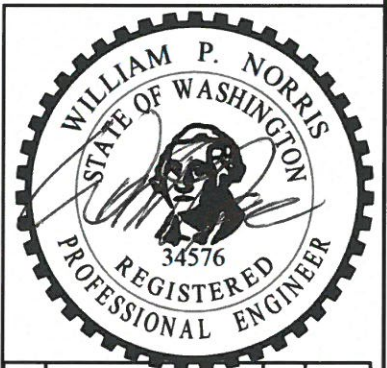
	EXISTING CONTOURS (1 FT INTERVALS)		ROOT WADS
	EXISTING ORDINARY HIGH WATER (OHW)		BOULDER WEIR
	PROPOSED 2-YR WATER SURFACE		POOLS
	PROPERTY LINE		SLASH
	EXISTING CULVERT		REGRADED AREA (DIG AND PITCH)
	EXISTING ROADS		REINFORCED CONCRETE BRIDGE EXCAVATION LIMITS
	TEMPORARY ACCESS		PROPOSED REINFORCED CONCRETE BRIDGE
	STAGING AND STOCKPILE		TEMPORARY VEHICULAR BYPASS FORD
	LIMITS OF DISTURBANCE		

SITE PLAN - PROPOSED CONDITIONS



0 40 80 Feet

NOTE:
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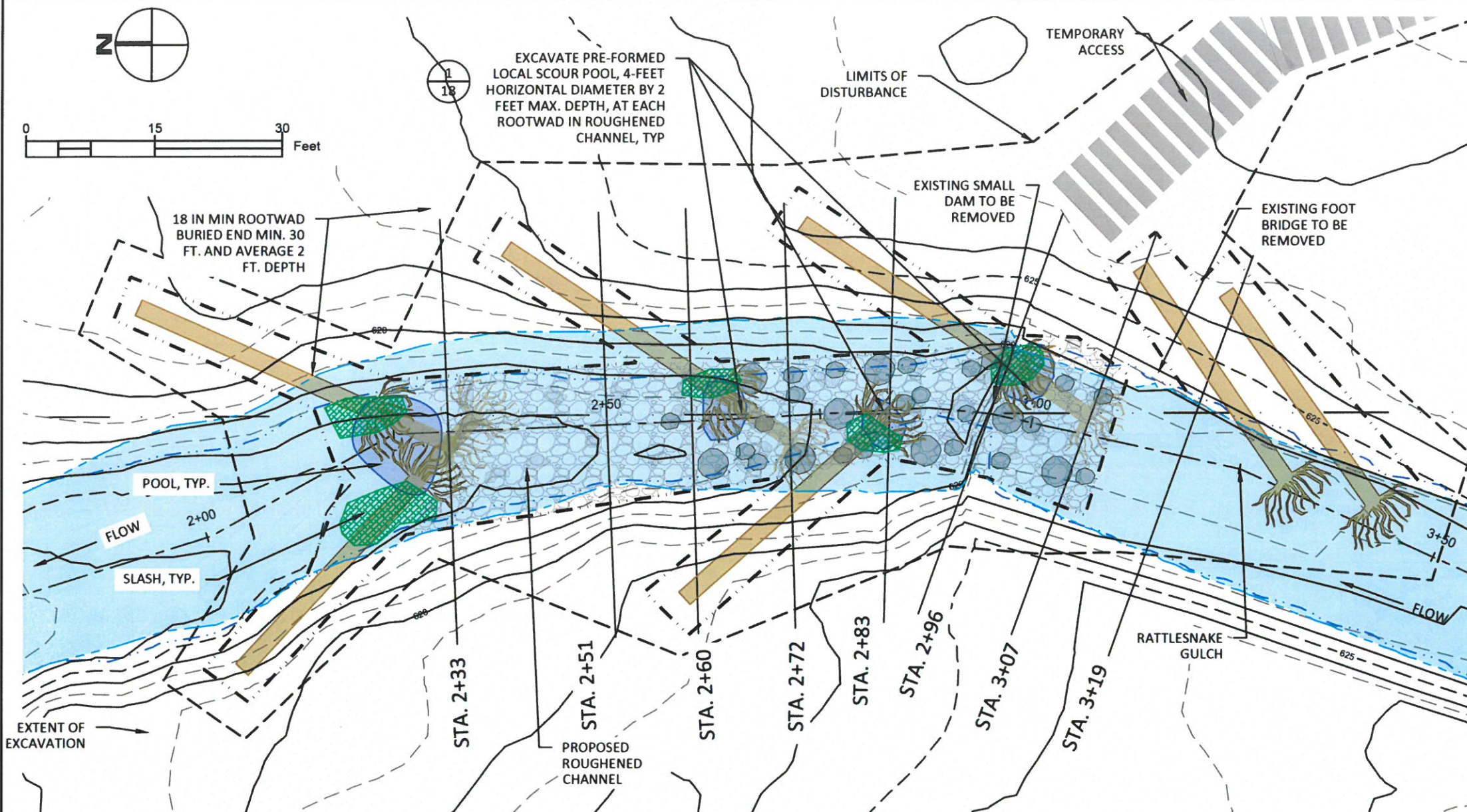
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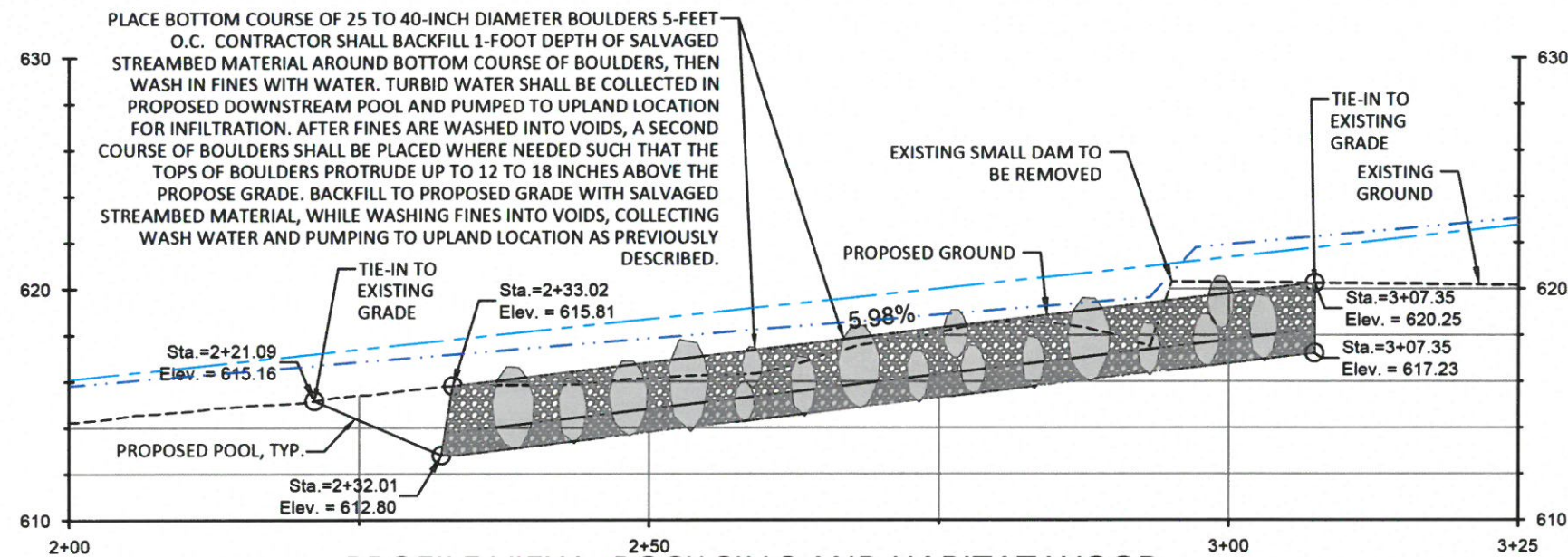
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ROAD CROSSINGS AND HABITAT IMPROVEMENT

TITLE:
SITE MAP - PROPOSED
CONDITIONS

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PLAN VIEW - ROCK SILLS AND HABITAT WOOD



PROFILE VIEW - ROCK SILLS AND HABITAT WOOD

LEGEND

- EXISTING CONTOURS (1 FOOT INTERVAL)
- OHW EXISTING ORDINARY HIGH WATER (OHW)
- PROPOSED 2-YR WATER SURFACE
- EXISTING ROADS
- TEMPORARY ACCESS
- LIMITS OF DISTURBANCE
- EXTENT OF EXCAVATION



ROOT WADS



PROPOSED ROUGHENED CHANNEL



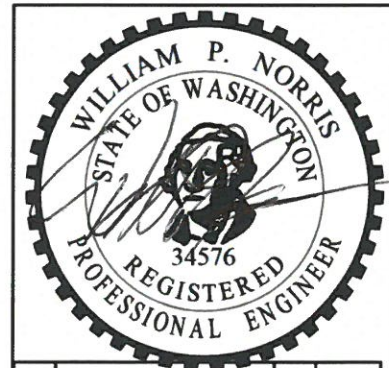
BOULDERS



POOLS



SLASH



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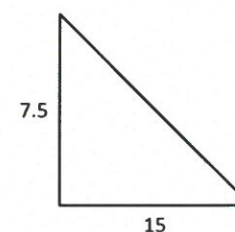
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ROAD CROSSINGS AND HABITAT IMPROVEMENT

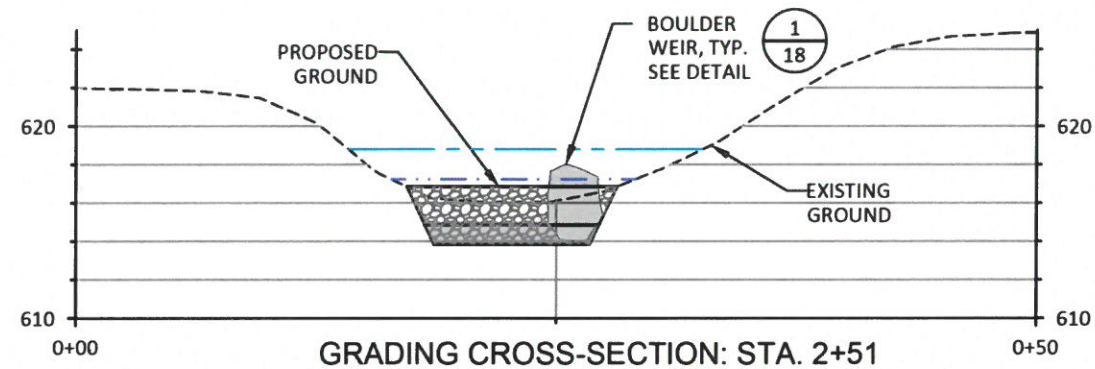
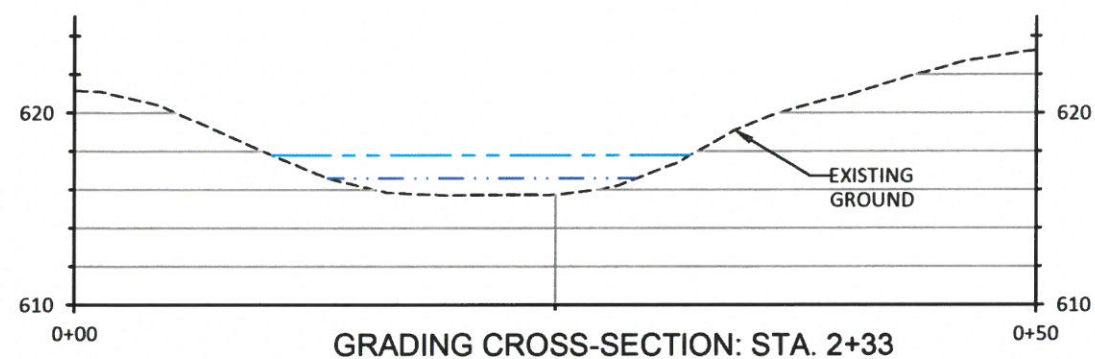
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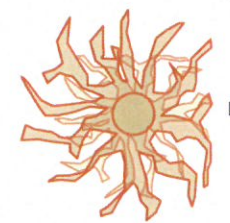
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- PROPOSED GROUND
- EXISTING ORDINARY HIGH WATER (OHW)
- PROPOSED 2YR WATER SURFACE
- BOULDER WEIR





LEGEND

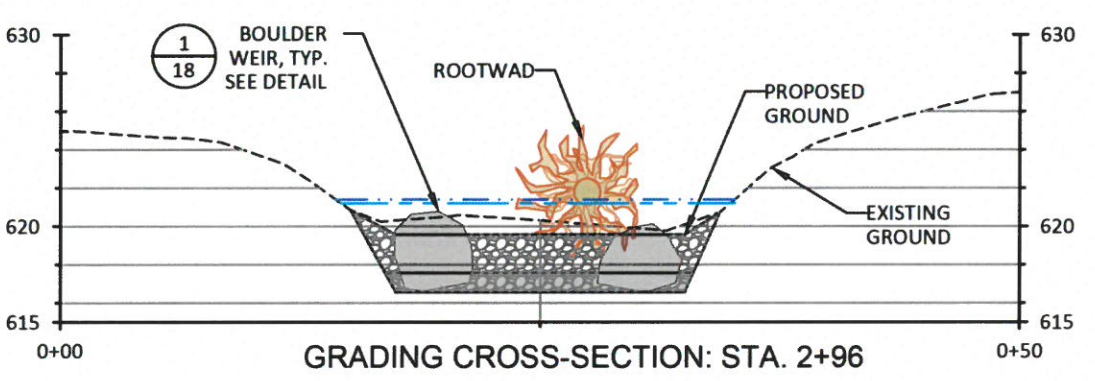
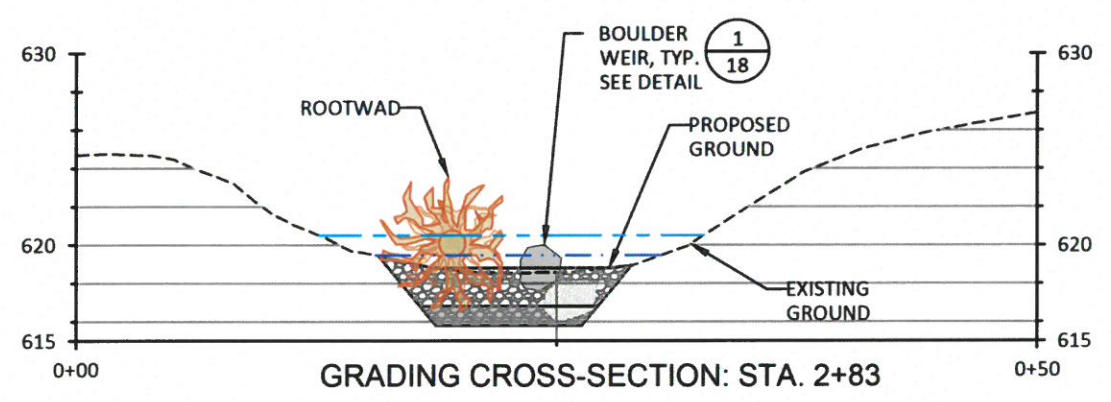
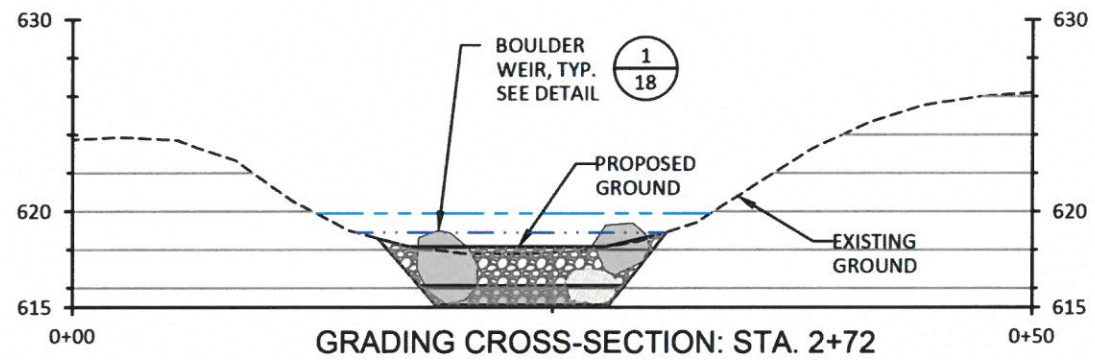
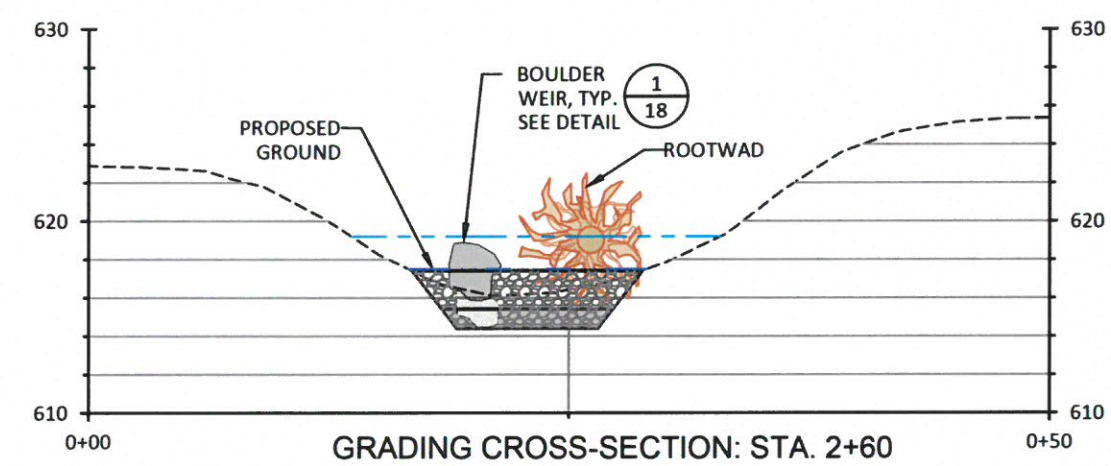
- EXISTING GROUND
- PROPOSED GROUND
- EXISTING ORDINARY HIGH WATER (OHW)
- PROPOSED 2YR WATER SURFACE



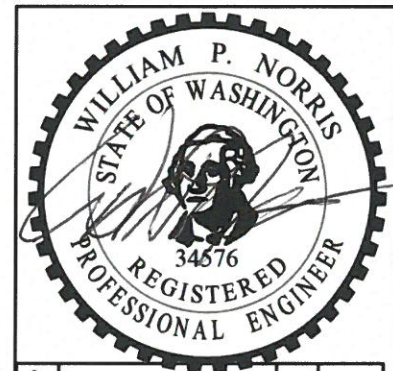
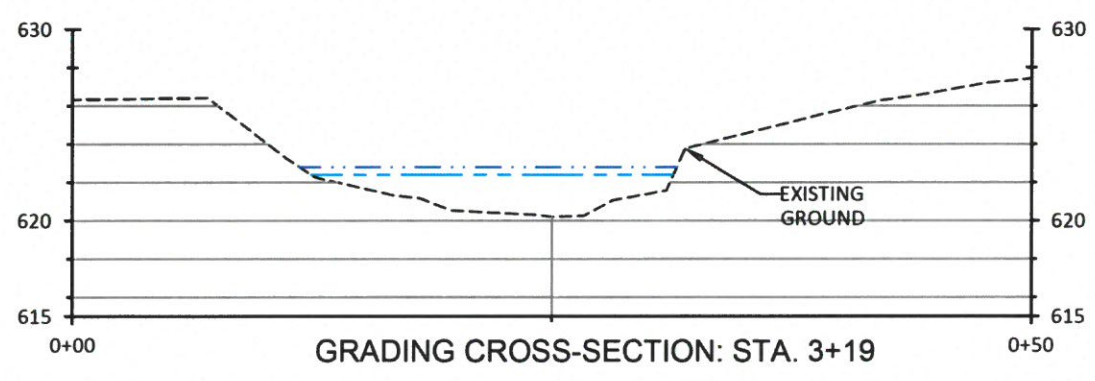
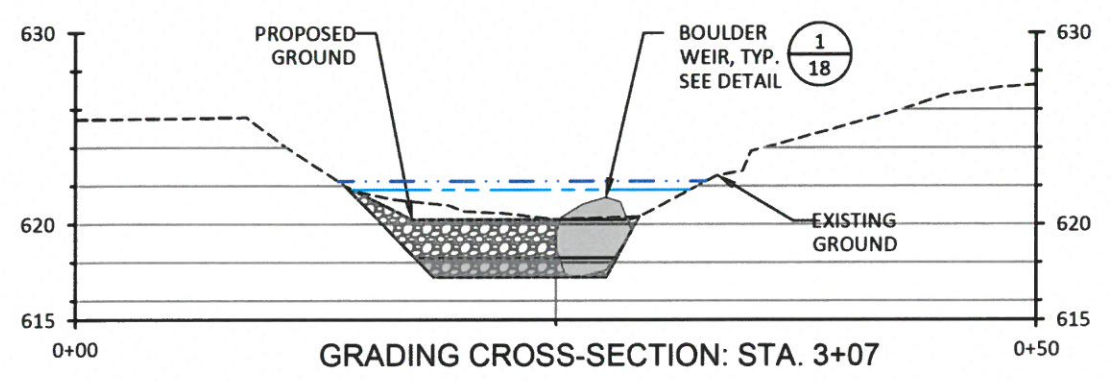
PROPOSED ROOTWAD



PROPOSED BOULDER WEIRS



NOTE:
PLACE BOTTOM COURSE OF 25 TO 40-INCH DIAMETER BOULDERS 5-FEET O.C. CONTRACTOR SHALL BACKFILL 1-FOOT DEPTH OF SALVAGED STREAMBED MATERIAL AROUND BOTTOM COURSE OF BOULDERS, THEN WASH IN FINES WITH WATER. TURBID WATER SHALL BE COLLECTED IN PROPOSED DOWNSTREAM POOL AND PUMPED TO UPLAND LOCATION FOR INFILTRATION. AFTER FINES ARE WASHED INTO VOIDS, A SECOND COURSE OF BOULDERS SHALL BE PLACED WHERE NEEDED SUCH THAT THE TOPS OF BOULDERS PROTRUDE UP TO 12 TO 18 INCHES ABOVE THE PROPOSED GRADE. BACKFILL TO PROPOSED GRADE WITH SALVAGED STREAMBED MATERIAL, WHILE WASHING FINES INTO VOIDS, COLLECTING WASH WATER AND PUMPING TO UPLAND LOCATION AS PREVIOUSLY DESCRIBED.



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REV	DESCRIPTION	BY	DATE
STATUS: Final Design			

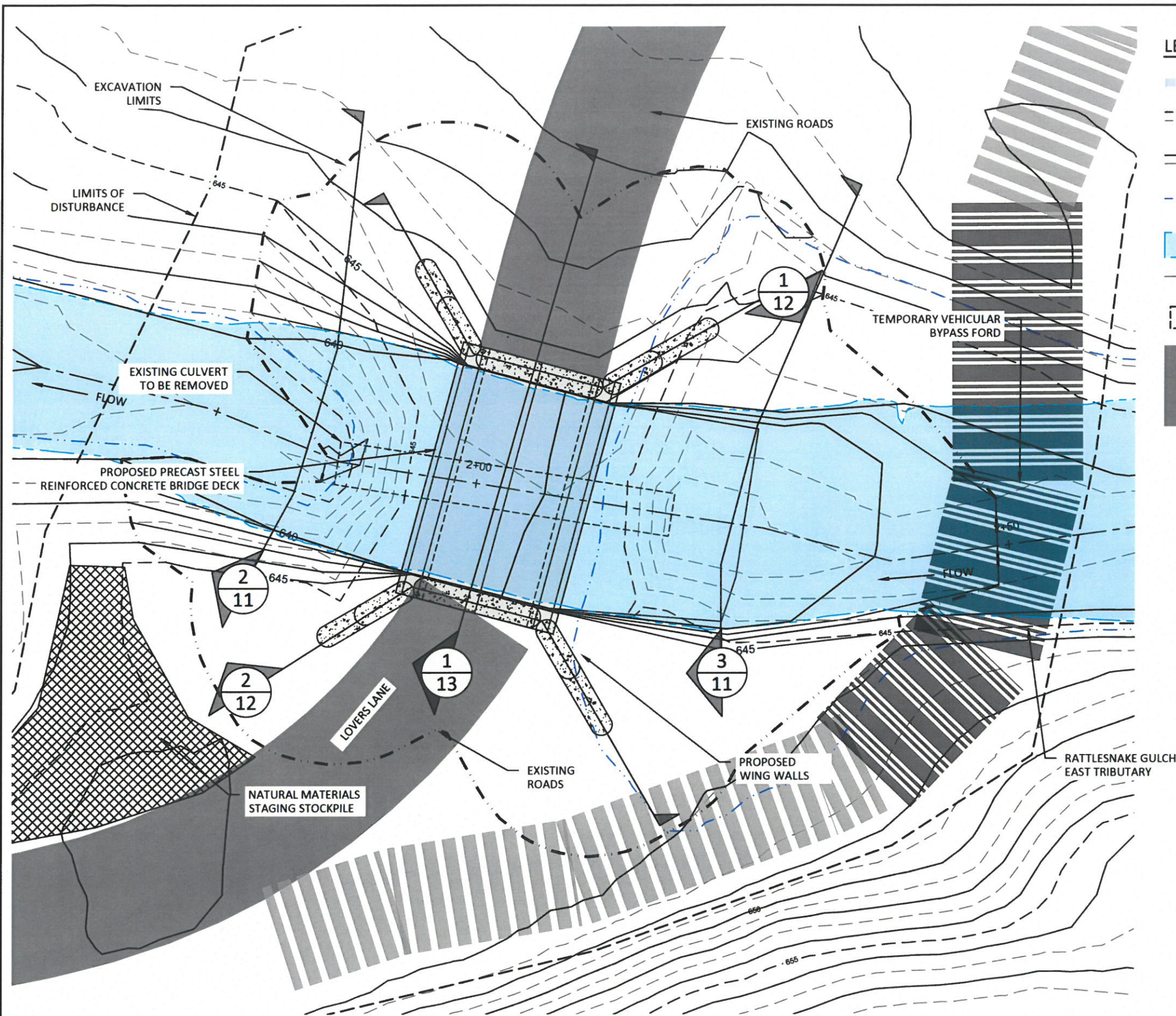
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CLIENT:
YAKAMA NATION FISHERIES PROGRAM
SOUTHERN TERRITORIES HABITAT PROJECT
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SITE: SWALE CREEK TRIBUTARIES
ROAD CROSSINGS AND HABITAT IMPROVEMENT

TITLE:
CROSS-SECTION -
DOWNSTREAM ROCK SILL

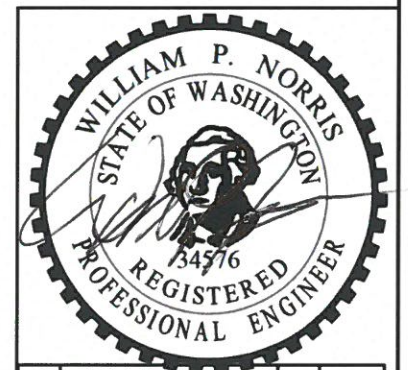
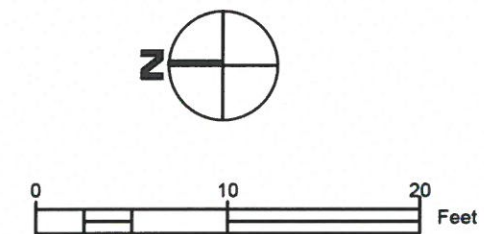
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PROJ. NO:	DRAWING NO:	Total Sheets:	
-	9	18	



PLAN VIEW - EAST TRIBUTARY BRIDGE CROSSING

LEGEND

	RATTLESNAKE GULCH		REGRADE CHANNEL BED (DIG & PITCH)
	EXISTING CONTOURS (1 FOOT INTERVAL)		LIMITS OF DISTURBANCE
	PROPOSED CONTOURS (1 FOOT INTERVAL)		REINFORCED CONCRETE BRIDGE EXCAVATION LIMITS
	EXISTING ORDINARY HIGH WATER (OHW)		PROPOSED REINFORCED CONCRETE BRIDGE
	PROPOSED 2YR WATER SURFACE		TEMPORARY VEHICULAR BYPASS FORD
	PROPERTY LINE		TEMPORARY ACCESS ROAD
	EXISTING CULVERT		
	EXISTING ROADS		
	PROPOSED 2YR INUNDATION		



3	-	-	-
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REV:	DESCRIPTION:	BY:	DATE:
STATUS: Final Design			

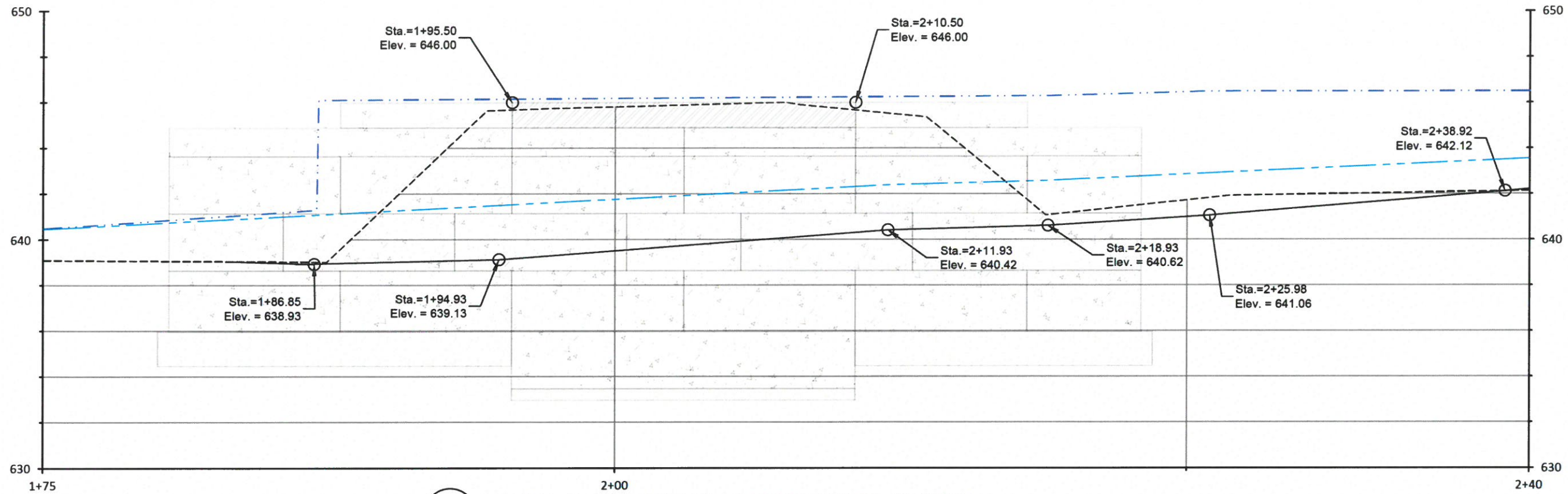
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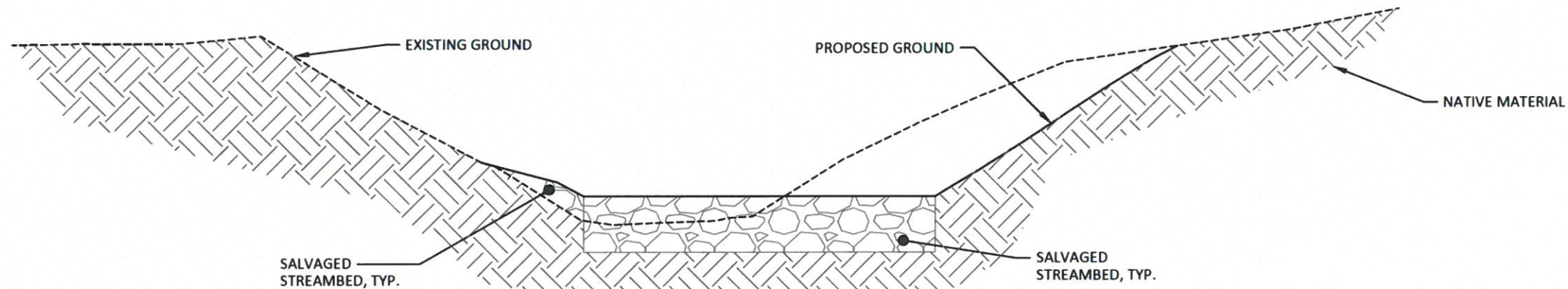
SITE: SWALE CREEK TRIBUTARIES
ROAD CROSSINGS AND HABITAT IMPROVEMENT

TITLE:
PLAN & PROFILE - EAST TRIBUTARY BRIDGE CROSSING

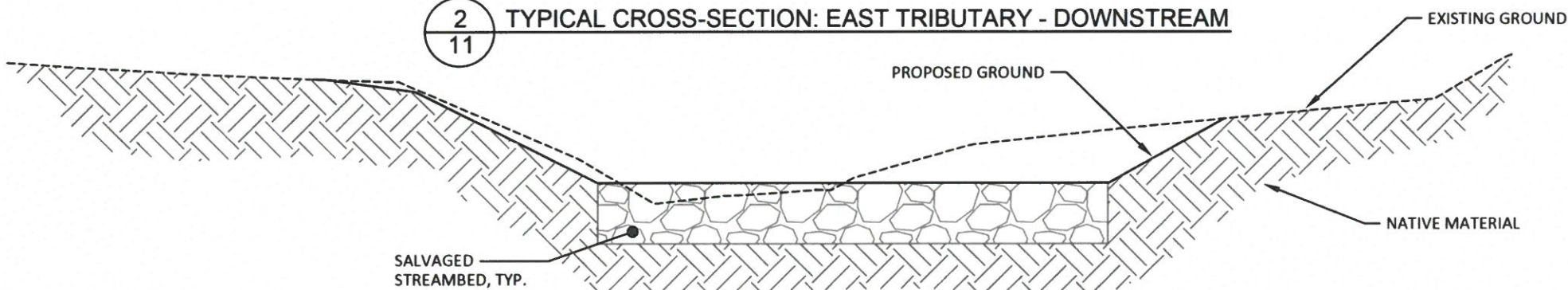
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	5/24/23	ME,RP,CP	BN,RP
PROJ. NO:	DRAWING NO:	Total Sheets:	
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1
11 TYPICAL CROSS-SECTION: EAST TRIBUTARY - PROFILE



2
11 TYPICAL CROSS-SECTION: EAST TRIBUTARY - DOWNSTREAM

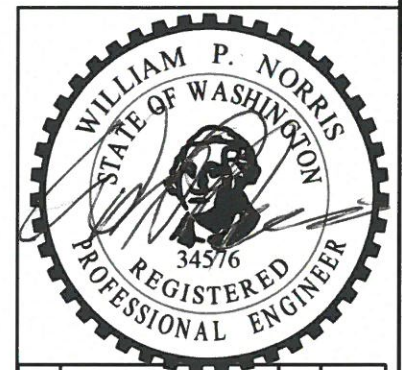
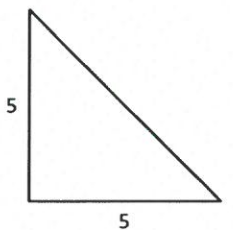


3
11 TYPICAL CROSS-SECTION: EAST TRIBUTARY - UPSTREAM

NOTE:
ALL CROSS-SECTIONS ARE ORIENTED
LOOKING DOWNSTREAM FROM
LEFT TO RIGHT.

LEGEND

- EXISTING GROUND
- PROPOSED GROUND
- ... EXISTING ORDINARY HIGH WATER (OHW)
- - - PROPOSED 2YR WATER SURFACE



3	-	-	-
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REV:	DESCRIPTION:	BY:	DATE:
STATUS: Final Design			

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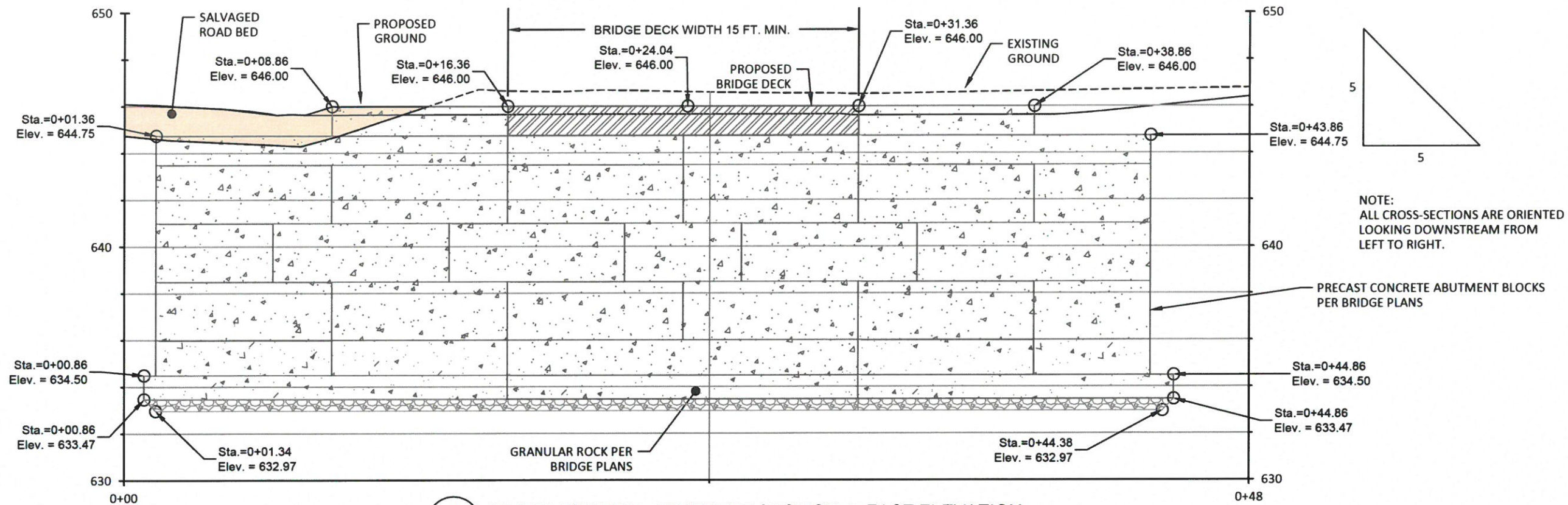
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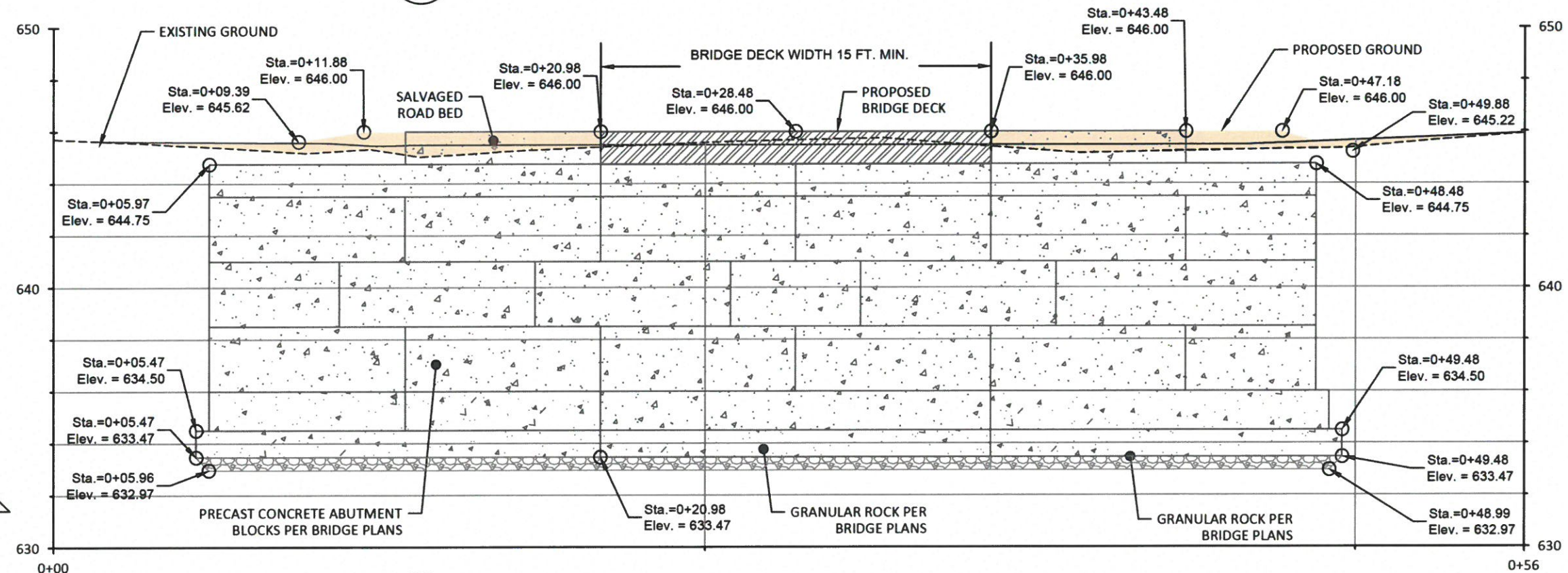
SITE: SWALE CREEK TRIBUTARIES
ROAD CROSSINGS AND HABITAT IMPROVEMENT

TITLE:
CROSS-SECTIONS - EAST
TRIBUTARY BRIDGE
CROSSING

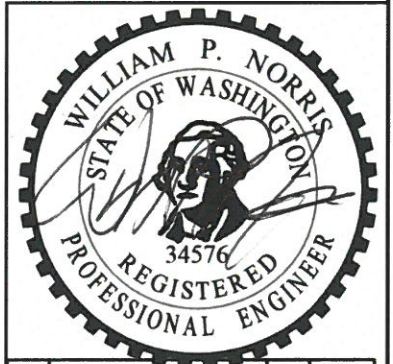
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PROJ. NO:	DRAWING NO:	Total Sheets:	
-	11	18	



1
12 CROSS-SECTION: ABUTMENT SECTION 1- EAST ELEVATION



2
12 CROSS-SECTION: ABUTMENT SECTION 1- EAST ELEVATION



3			
2			
1			
REV.	DESCRIPTION	BY	DATE
STATUS: Final Design			

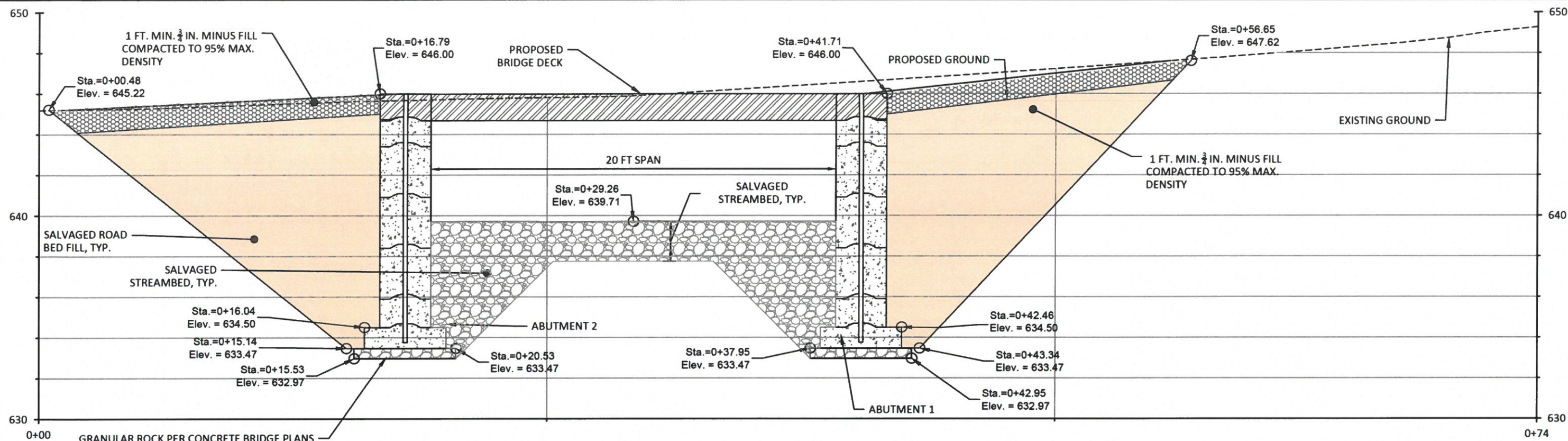
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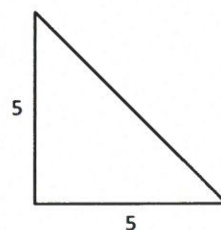
SITE: SWALE CREEK TRIBUTARIES
ROAD CROSSINGS AND HABITAT IMPROVEMENT

TITLE:
ABUTMENT SECTIONS - EAST TRIBUTARY

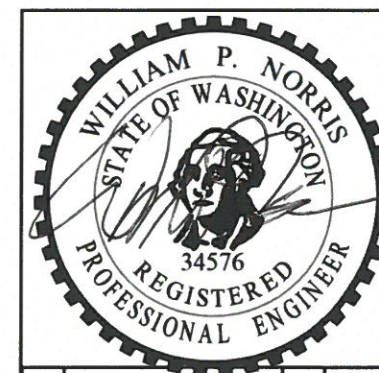
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	5/24/23	ME,RP,CP	BN,RP
PROJ. NO:	DRAWING NO:	Total Sheets:	
-	12	18	



1
13 CROSS-SECTION: EAST TRIBUTARY ROAD CROSSING



NOTE:
ALL CROSS-SECTIONS ARE ORIENTED
LOOKING DOWNSTREAM FROM
LEFT TO RIGHT.



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2	-	-	-
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STATUS: Final Design			

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SITE: SWALE CREEK TRIBUTARIES
ROAD CROSSINGS AND HABITAT IMPROVEMENT

TITLE:
CROSS-SECTIONS - EAST
TRIBUTARY BRIDGE
CROSSING

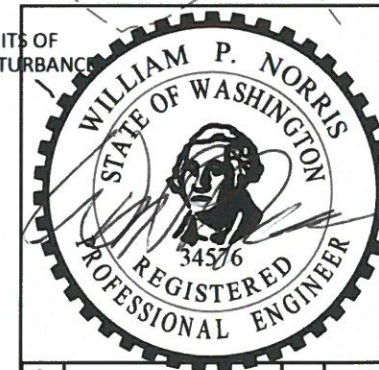
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LEGEND

	RATTLESNAKE GULCH		REGRADE CHANNEL BED (DIG & PITCH)
	EXISTING CONTOURS (1 FOOT INTERVAL)		LIMITS OF DISTURBANCE
	PROPOSED CONTOURS (1 FOOT INTERVAL)		REINFORCED CONCRETE BRIDGE EXCAVATION LIMITS
	EXISTING ORDINARY HIGH WATER (OHW)		PROPOSED REINFORCED CONCRETE BRIDGE
	PROPOSED 2YR WATER SURFACE		TEMPORARY VEHICULAR BYPASS FORD
	PROPERTY LINE		TEMPORARY ACCESS ROAD
	EXISTING CULVERT		
	EXISTING ROADS		



PLAN VIEW - WEST TRIBUTARY BRIDGE CROSSING



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2	-	-	-
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REV.	DESCRIPTION:	BY:	DATE:
STATUS: Final Design			

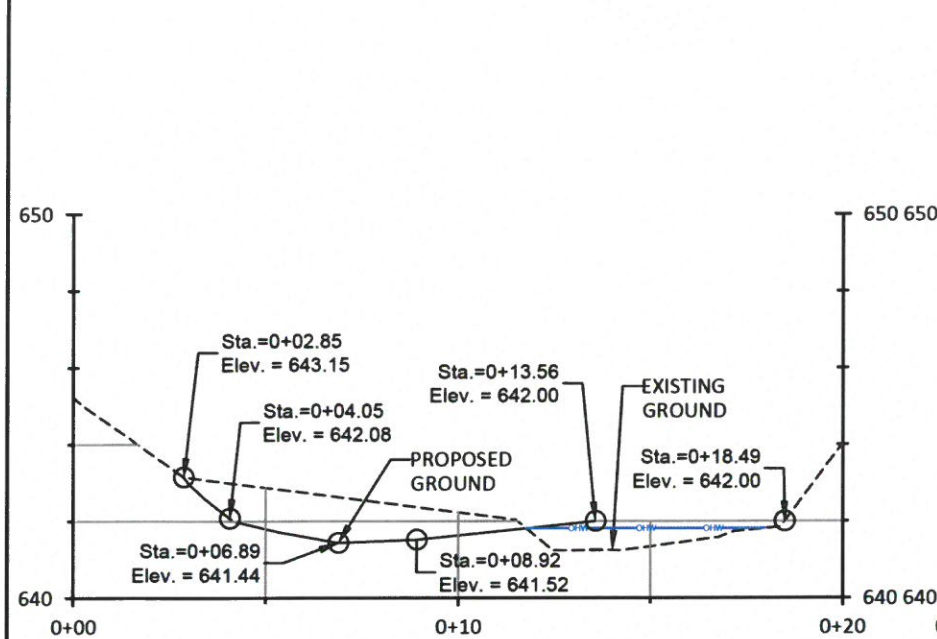
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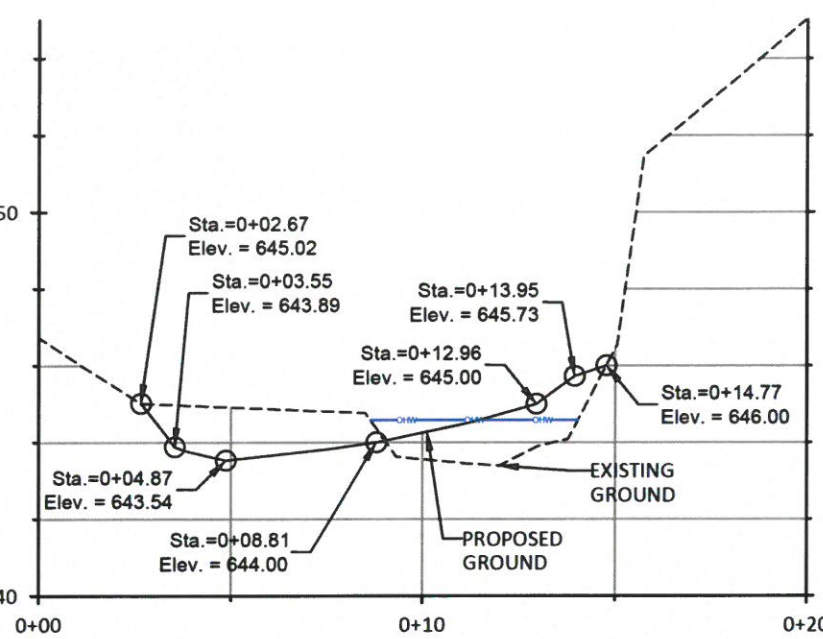
SITE: SWALE CREEK TRIBUTARIES
ROAD CROSSINGS AND HABITAT IMPROVEMENT

TITLE:
PLAN & PROFILE - WEST TRIBUTARY BRIDGE CROSSING

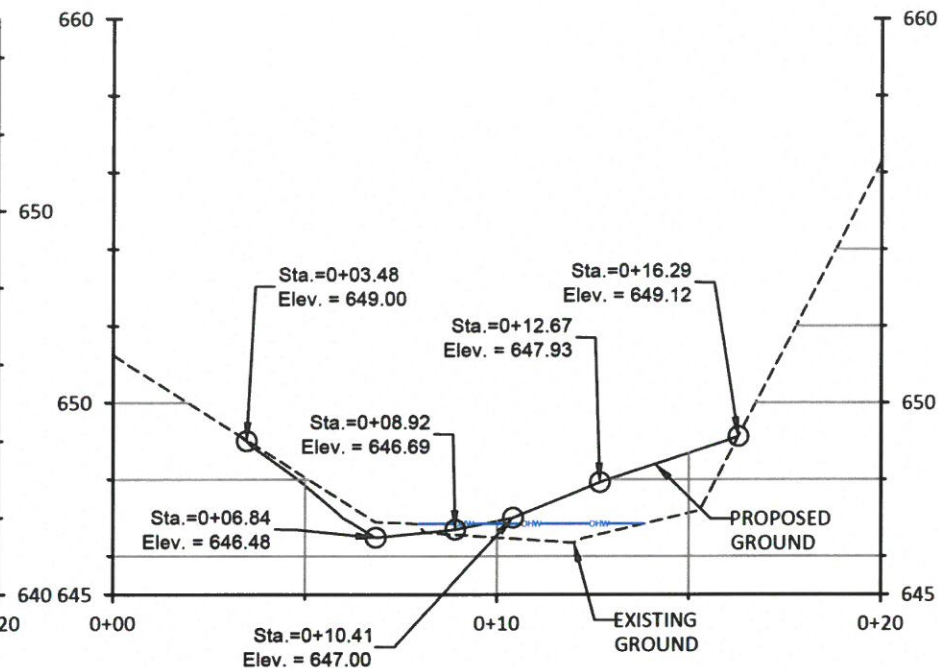
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1
14 GRADING CROSS-SECTION: STA. 6+25



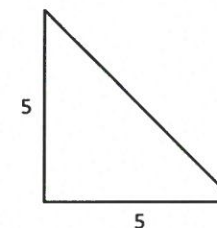
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14 GRADING CROSS-SECTION: STA. 6+50



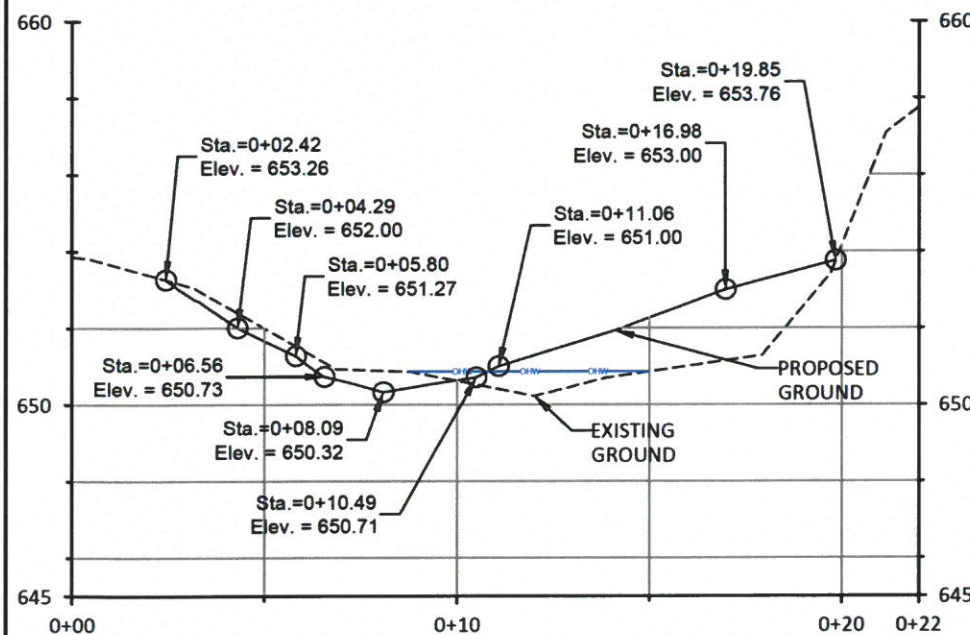
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14 GRADING CROSS-SECTION: STA. 6+75

LEGEND

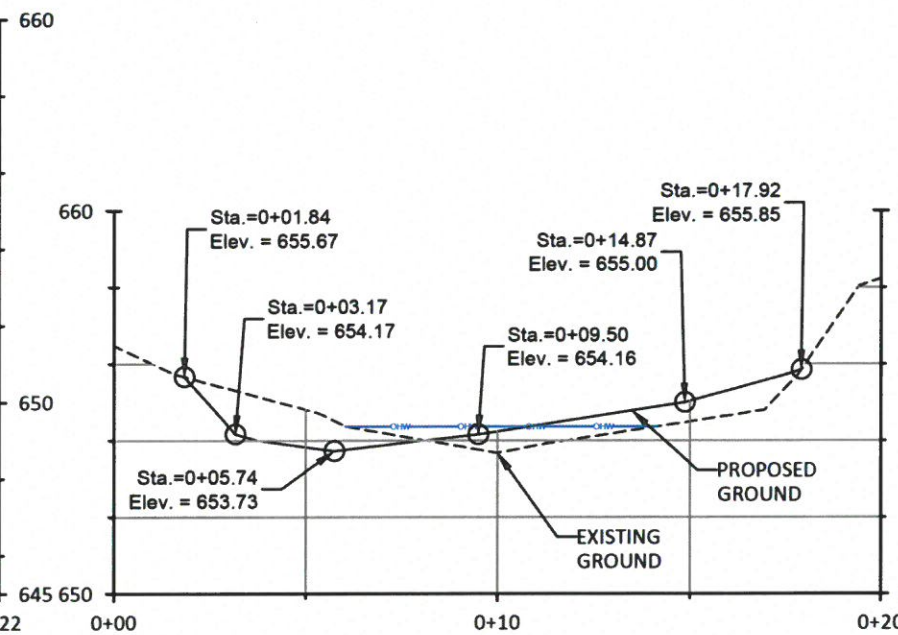
- EXISTING GROUND
- PROPOSED GROUND
- EXISTING ORDINARY HIGH WATER (OHW)



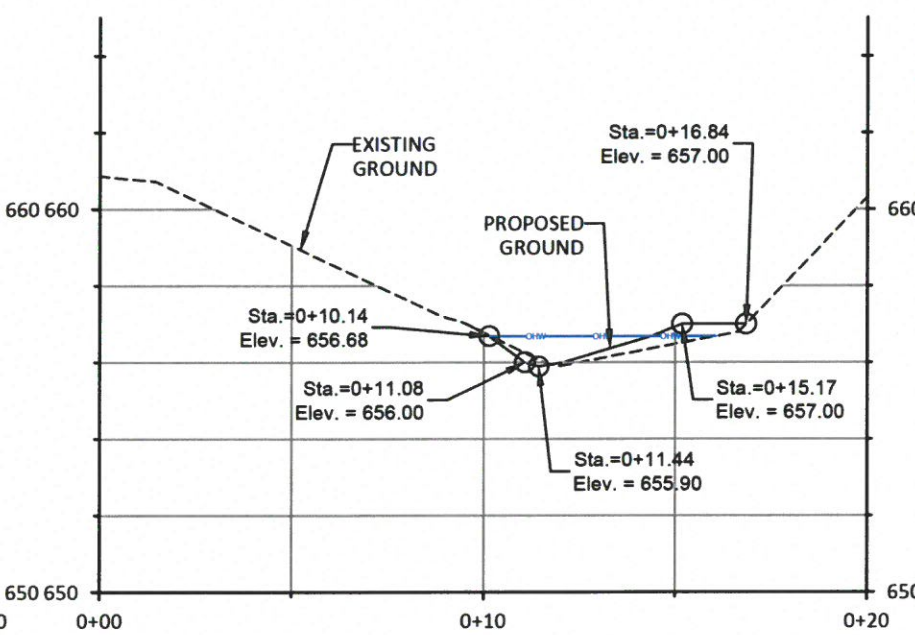
NOTE:
ALL CROSS-SECTIONS ARE ORIENTED
LOOKING DOWNSTREAM FROM
LEFT TO RIGHT.



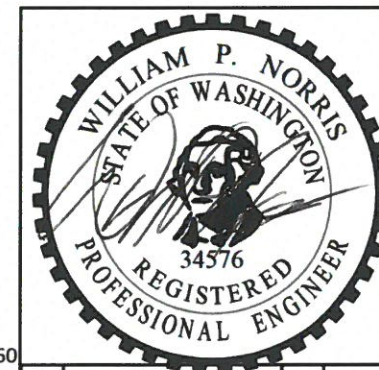
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14 GRADING CROSS-SECTION: STA. 7+00



5
14 GRADING CROSS-SECTION: STA. 7+25



6
14 GRADING CROSS-SECTION: STA. 7+50



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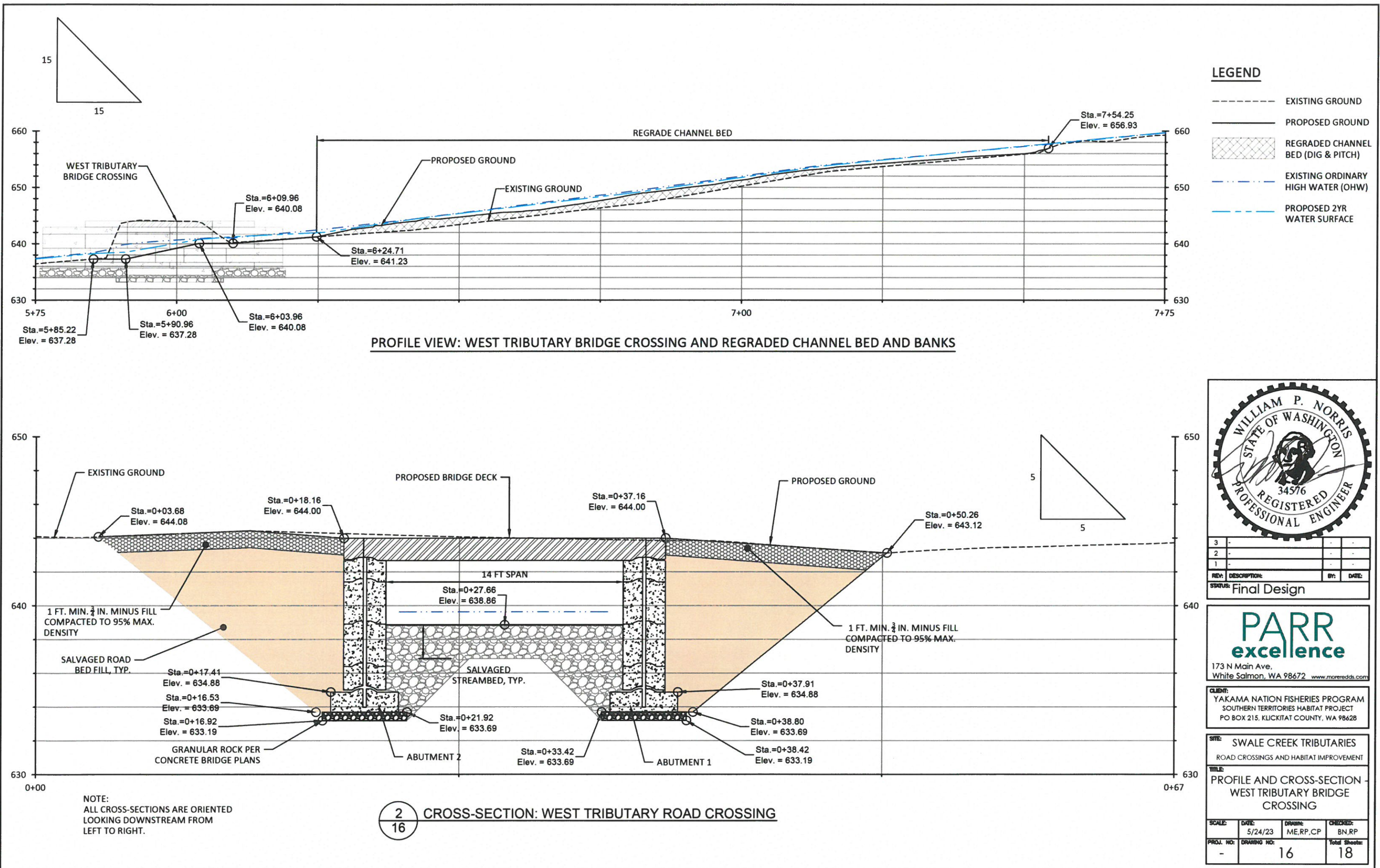
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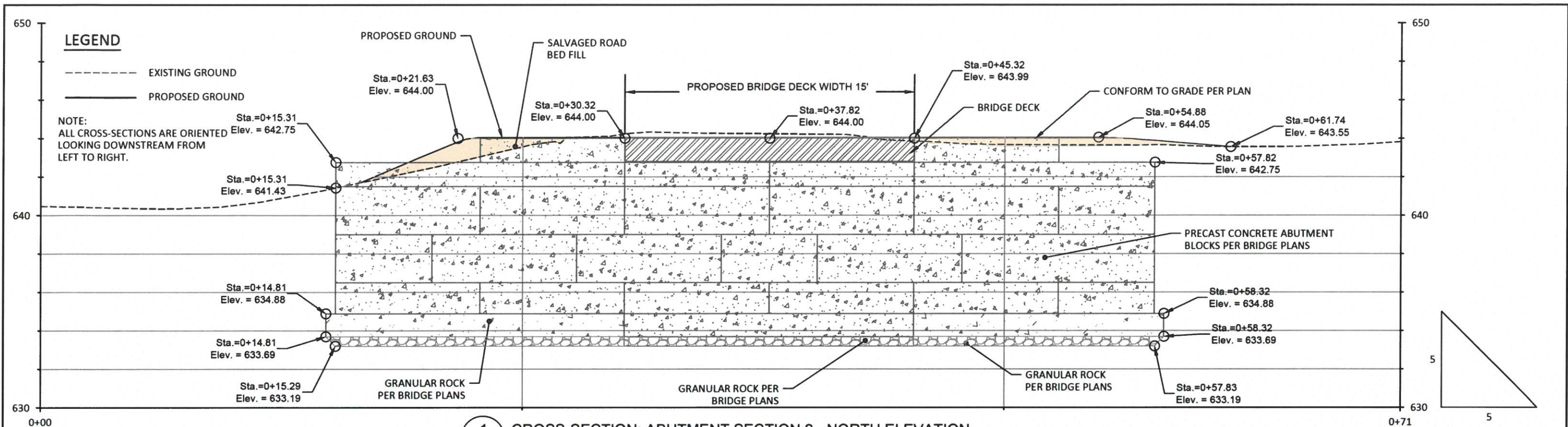
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SITE: SWALE CREEK TRIBUTARIES
ROAD CROSSINGS AND HABITAT IMPROVEMENT

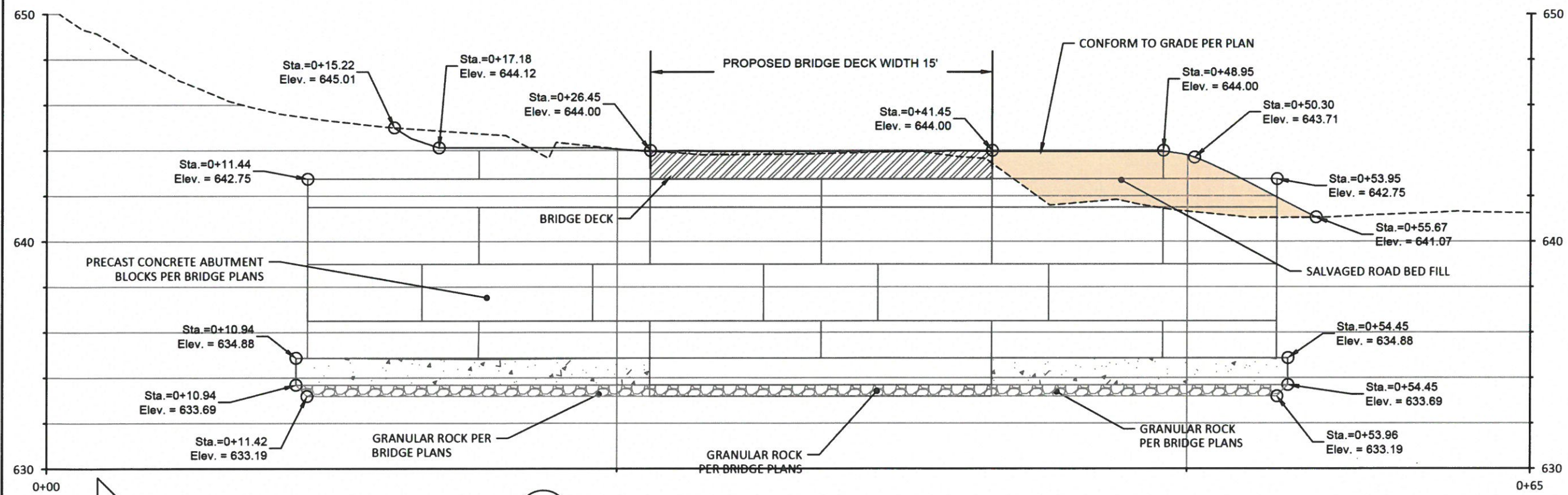
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CROSS-SECTIONS - WEST
TRIBUTARY BRIDGE
CROSSING

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PROJ. NO.	DRAWING NO.	Total Sheets	
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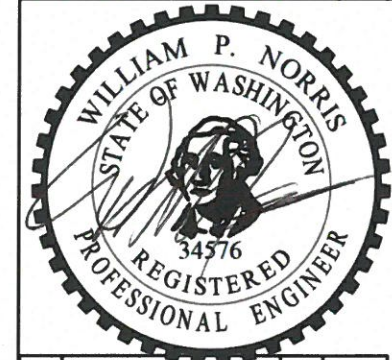




1
17 CROSS-SECTION: ABUTMENT SECTION 2 - NORTH ELEVATION



2
17 CROSS-SECTION: ABUTMENT SECTION 1 - SOUTH ELEVATION



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REV	DESCRIPTION	BY	DATE
STATUS: Final Design			

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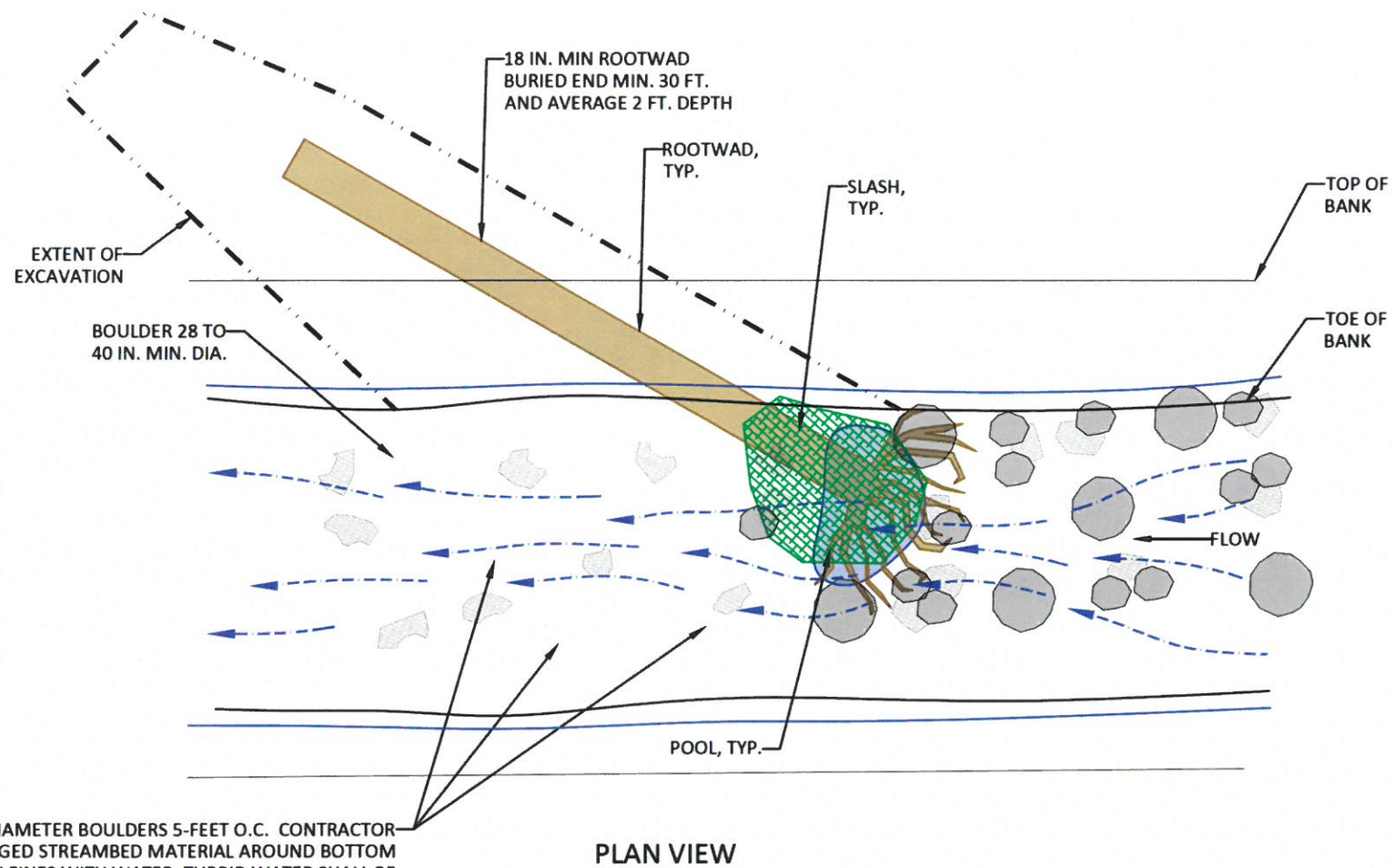
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ROAD CROSSINGS AND HABITAT IMPROVEMENT

TITLE:
ABUTMENT SECTIONS - WEST TRIBUTARY

SCALE:	DATE: 5/24/23	DRAWN: ME,RP,CP	CHECKED: BN,RP
PROJ. NO:	DRAWING NO: 17	Total Sheets: 18	



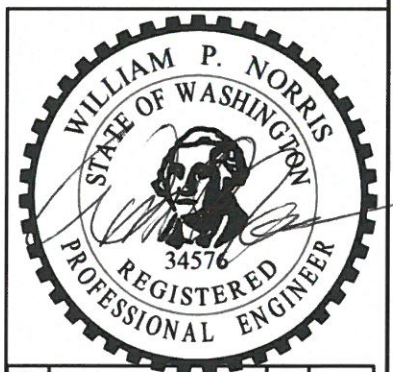
PLACE BOTTOM COURSE OF 25 TO 40-INCH DIAMETER BOULDERS 5-FEET O.C. CONTRACTOR SHALL BACKFILL 1-FOOT DEPTH OF SALVAGED STREAMBED MATERIAL AROUND BOTTOM COURSE OF BOULDERS, THEN WASH IN FINES WITH WATER. TURBID WATER SHALL BE COLLECTED IN PROPOSED DOWNSTREAM POOL AND PUMPED TO UPLAND LOCATION FOR INFILTRATION. AFTER FINES ARE WASHED INTO VOIDS, A SECOND COURSE OF BOULDERS SHALL BE PLACED WHERE NEEDED SUCH THAT THE TOPS OF BOULDERS PROTRUDE UP TO 12 TO 18 INCHES ABOVE THE PROPOSED GRADE. BACKFILL TO PROPOSED GRADE WITH SALVAGED STREAMBED MATERIAL, WHILE WASHING FINES INTO VOIDS, COLLECTING WASH WATER AND PUMPING TO UPLAND LOCATION AS PREVIOUSLY DESCRIBED.

PLAN VIEW

1
18

TYPICAL DETAIL: POOL ASSOCIATED WITH ROUGHEND CHANNEL

NOT TO SCALE



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2	-	-	-
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TITLE:
TYPICAL DETAILS - BOULDER
WEIR

SCALE:	DATE: 5/24/23	DRAWN: ME,RP,CP	CHECKED: BN,RP
PROJ. NO: -	DRAWING NO: 18	Total Sheets: 18	